



# Kappa 202a Automotive Amplifier

## SERVICE MANUAL



Infinity Systems Incorporated  
250 Crossways Park Dr.  
Woodbury, New York 11797

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## KAPPA 202A SPECIFICATIONS

POWER		
4 OHM		2 x 200 watts
2 OHM		2 x 300 watts
BRIDGE 4 OHM		600 watts
1 OHM STABLE		PROTECTION
FREQUENCY RESPONSE		20-20KHz (+0 -3dB)
EQUALIZATION		SEE CHART BELOW
FIXED AT 40Hz Q=1 +11dB		
CROSSOVER		
FLAT/LOW/HIGH PASS SWITCH		1
VAR. CONTROL		1
SLOPE		12
INPUT SENSITIVITY		250 mV ~ 9 V
FULL DIFFERENTIAL INPUT		>100K IMP
POWER FUSE		40A X 2 (ATC)
THD + NOISE		
4 ohm		0.05%
2 ohm		0.10%
bridge 4 ohm		0.10%
SIGNAL TO NOISE		>95dB (A Weighted Referenced 1 Watt)
CHANNEL SEPARATION		>50dB (100 TO 20KHz)
DAMPING FACTOR		>203
TURN ON TIME		3 SEC
DC OFFSET		<50 mv
OPERATING VOLTAGE		10 -16vdc
REMOTE ON CURRENT		<2ma
QUIESCENT CURRENT		<2.0 AMP
MAX CURRENT		80
PROTECTION auto reset		
spkr short		Yes
spkr to ground		Yes
thermal		Yes
over voltage		18vdc
under voltage		8vdc
DIMENSIONS		23 x 2 3 /16 x 8 1 /2 in. (W x H x L)
		584.2 x 55.6 x 215.9 mm

All tests to be done from 20 to 20KHz at 14.4 VDC into 4 ohm loads, unless otherwise specified.

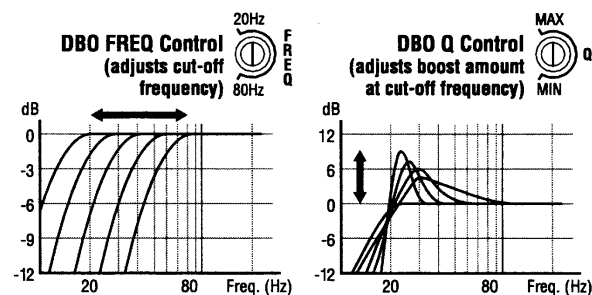


Figure 9. Frequency response curves show range of Kappa 202a DBO controls.

Infinity continually strives to update and improve existing products, as well as create new ones. The specifications and construction details in this and related Infinity publications are therefore subject to change without notice.

## FEATURES

The Kappa 202a is a 2-channel power amplifier that offers full-range stereo, bridged-mono or tri-mode operation, and is rated at 200 watts (rms) per channel into a 4-ohm load. In a bridged-mono configuration, it can deliver up to 600 watts (rms) for the same load. The 202a also features:

- 2-ohm operation, rated at 300 watts (rms) per channel
- A bridge/stereo switch for fast system setup
- A built-in 12 dB-per-octave electronic crossover, variable from 32 to 320 Hz
- Dynamic Bass Optimizer™ (DBO) 12 dB-per-octave subsonic filter with variable frequency (20 to 80 Hz) and Q for enhancing low frequencies while conserving amplifier power
- Individually selectable high and low-pass filters (with through-pass) for amplifier and auxiliary outputs
- Amplifier input sensitivity control to match a wide range of input signal levels from 250 mV to 9 V
- Separate power supplies for each channel
- Five protection levels guard against over-voltage, undervoltage, over-power, over-temperature, and over-current situations
- 2-color LED array indicates green when power is on and orange when protection is activated
- Industrial-grade, gold-plated, “pre-wire and plug-in” connectors for an easy-to-install high-quality interface
- Transparent control cover to deter tampering yet provide a clear view of installation settings
- Built-in automotive type fuses to protect the amplifier
- Unibloc™ chassis provides improved heat-sink capacity and exceptional RFI shielding characteristics

## APPLICATIONS

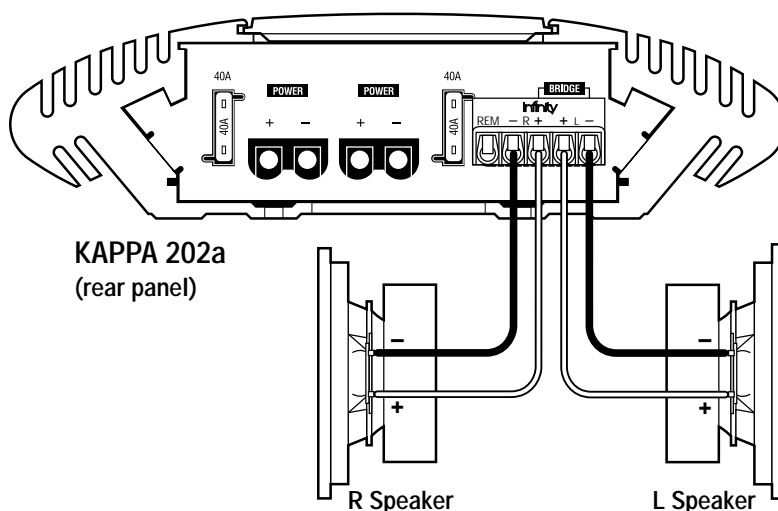
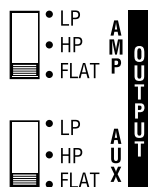
For your convenience, we've included several application diagrams to help you plan your own system installation. Figures 1 through 3 show how to configure the Kappa 202a for stereo, bridged-mono, and tri-mode operation.

*Figure 1. This wiring diagram shows a Kappa 202a amplifier set to stereo to drive a pair of full-range speakers.*

**Set Mode Switch To STEREO**  
(on top panel)



**Set Filter Switches To FLAT**  
(on top panel)

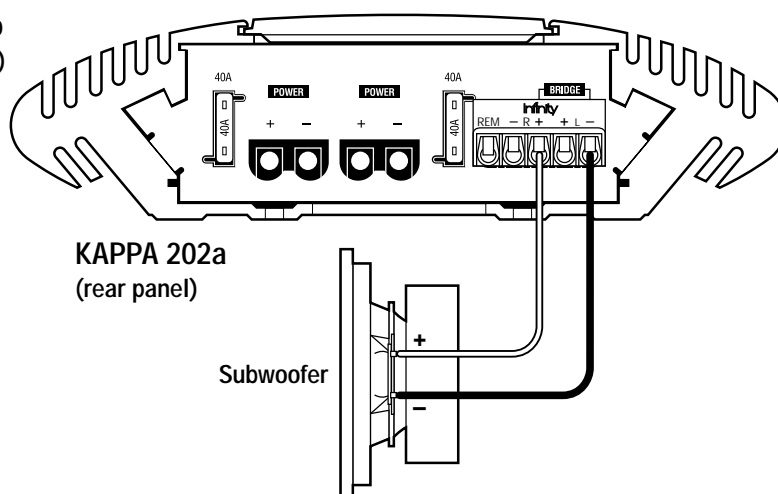
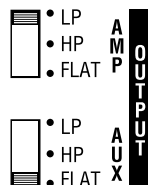


*Figure 2. This wiring diagram shows a Kappa 202a amplifier set to bridge (mono) to drive a single subwoofer.*

**Set Mode Switch To BRIDGE** (on top panel)



**Set Filter Switches**  
(on top panel)

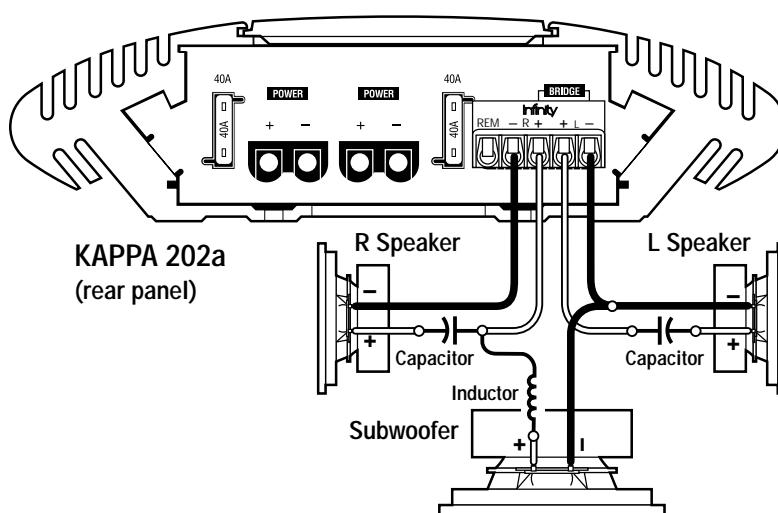
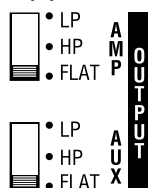


*Figure 3. This wiring diagram shows a Kappa 202a amplifier set for tri-mode operation. For a desired crossover frequency, use the chart to select a low-pass inductor for the subwoofer, and corresponding high-pass capacitors for left and right speakers.*

**Set Mode Switch To STEREO**  
(on top panel)



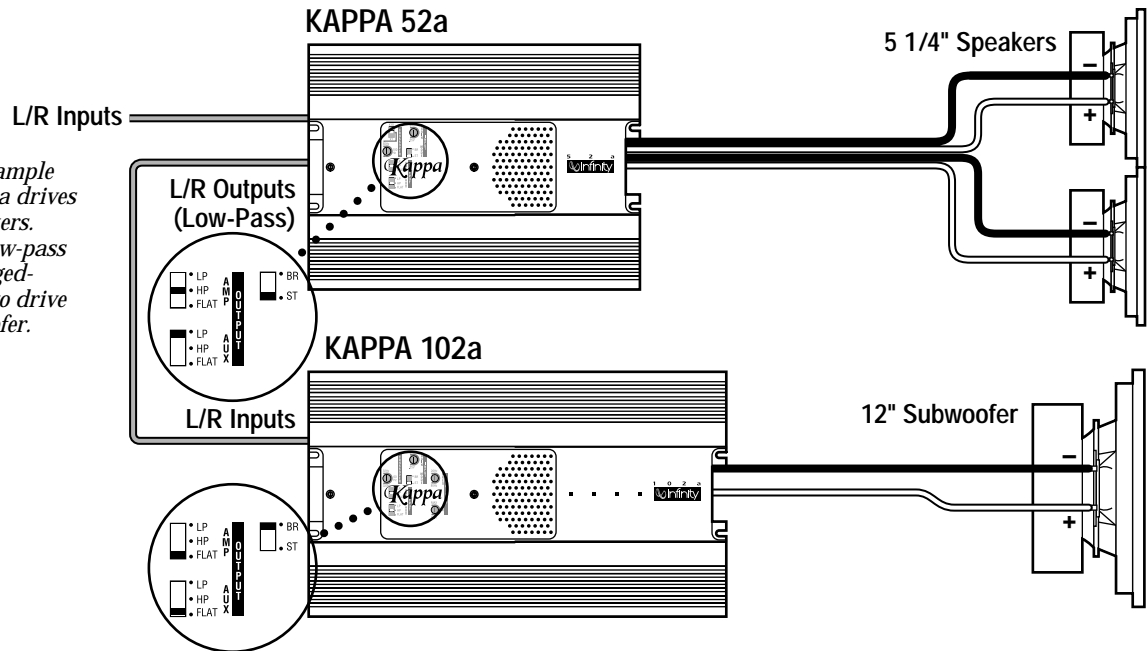
**Set Filter Switches To FLAT**  
(on top panel)



FREQUENCY Crossover	INDUCTOR 6 dB/oct. LP (4 ohm)	CAPACITOR 6 dB/oct. HP (4 ohm)
75 Hz	8.0 mH	530 $\mu$ F
100 Hz	6.4 mH	400 $\mu$ F
125 Hz	5.0 mH	318 $\mu$ F
150 Hz	4.2 mH	265 $\mu$ F
175 Hz	3.6 mH	227 $\mu$ F
200 Hz	3.2 mH	198 $\mu$ F

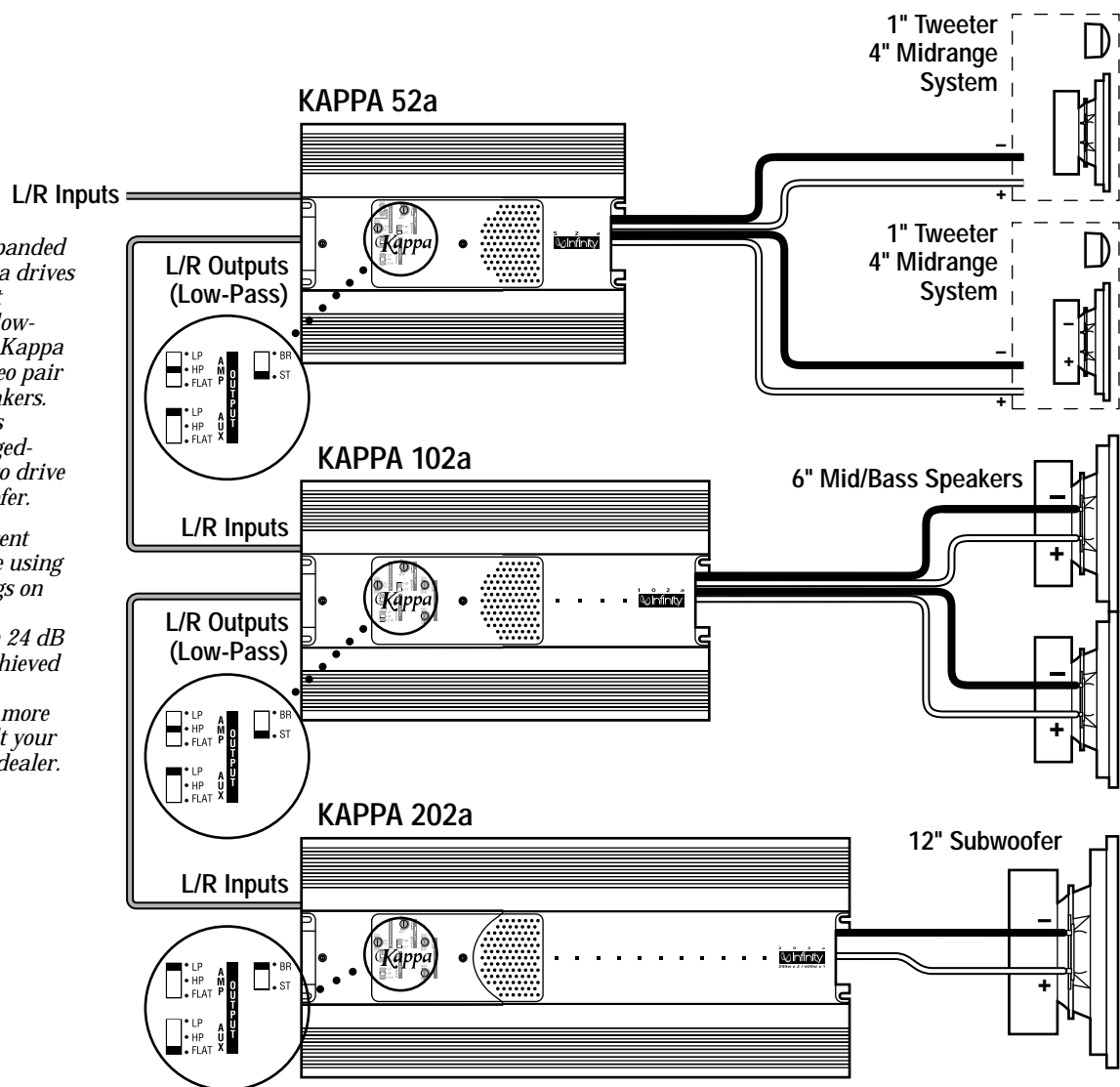
## SYSTEM EXPANSION

*Figure 4. In this example system, a Kappa 52a drives a pair of 5 1/4" speakers. The 102a's stereo low-pass outputs feed a bridged-mono Kappa 102a to drive a single 12" subwoofer.*



*Figure 5. In this expanded system, a Kappa 52a drives a pair of component systems. The 52a's low-pass outputs feed a Kappa 102a to drive a stereo pair of 6" mid/bass speakers. The 102a's low-pass outputs feed a bridged-mono Kappa 202a to drive a single 12" subwoofer.*

*NOTE: Many different systems are possible using the crossover settings on Kappa amplifiers, including ones with 24 dB per octave slopes achieved through cascaded configurations. For more information, consult your Infinity Car Audio dealer.*



## PRECAUTIONS AND NOTES

- The Kappa 202a has five levels of circuit protection that monitor the amplifier and will shut it down if the electrical system voltage drops below 10 Vdc or exceeds 15.5 Vdc, temperatures are above 194° F (90° C), short circuits occur, or current draw exceeds product specifications. For best performance, check the intended mounting site to make sure the operating environment does not create conditions that will trigger circuit protection.
- Prior to installation, turn off all audio systems and other electrical devices. Also disconnect the (–) negative lead from the vehicle's battery.
- At the installation site, locate and make a note of all fuel lines, hydraulic brake lines, and electrical wiring. Use extreme caution when cutting or drilling in and around these areas.
- Use the amplifier as a mounting template to mark locations for the mounting holes.
- Check clearances on both sides of a planned mounting surface before drilling any holes or installing any screws. Remember that mounting screws can extend up to an inch behind the surface.
- Always wear protective eyewear when using tools.
- The Kappa 202a uses gold-plated, industrial-grade Weco® plug-in connectors for power and speaker wiring. Because of precision tolerances, do not insert the connectors into the amplifier without pre-wiring them first. Once the wires are fastened in each shell, they provide additional gripping area for easy connector removal.
- When routing cables, keep input signal cables away from power cables and output speaker wires, as shown in Figure 6 (below).
- When making connections, make sure that each connection is clean and properly secured. Observe the polarity markings on the rear panel. Refer to the application drawings (Figures 1 through 3 on page 3) to set up the amplifier for operation in stereo, bridged-mono, bi-amp, or tri-mode configurations.
- If the amplifier's fuse needs replacement, use only the same rating and type as a replacement. Do not substitute another kind.

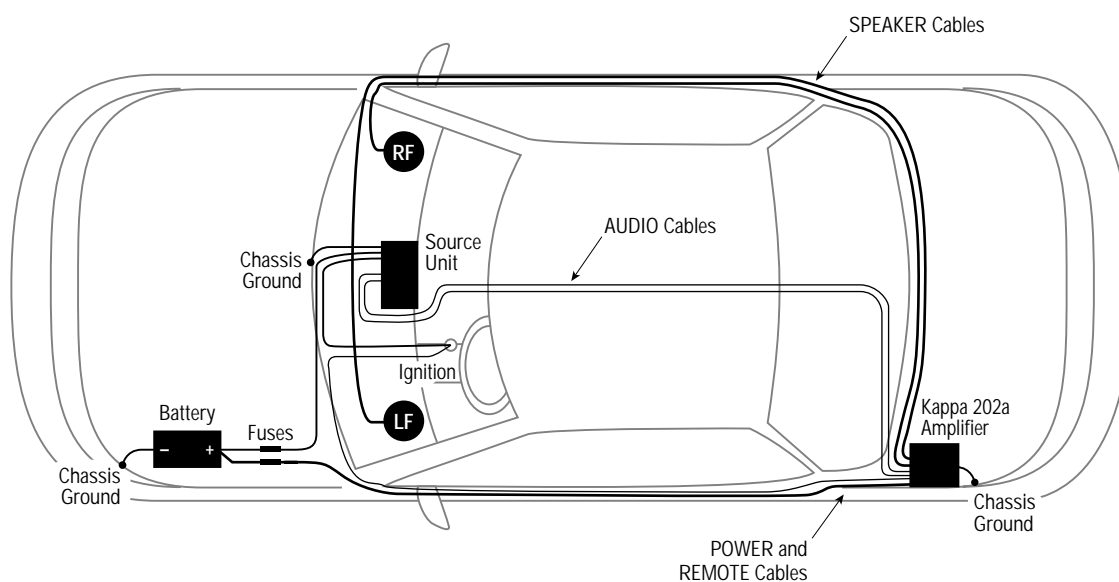


Figure 6. To minimize possible noise pickup, use this suggested cable routing scheme to plan your amplifier installation.

## INSTALLATION

The Kappa 202a is easy to install. For optimum performance, we recommend using high-quality, twisted-pair shielded RCA audio cables and 14-gauge or larger speaker wire. Also, you'll need a minimum of 12-gauge stranded copper wire (e.g., red and black jackets) for the power connections. Use 18-gauge (e.g., blue jacket) wire for remote turn-on.

Depending on your total system plan, allow for adequate time and the possibility of overnight storage of your vehicle, since it may take more than one day to complete the installation.

### PARTS LIST...

Examine and verify that the package includes the following items:

- (1) Kappa 202a Power Amplifier
- (2) Spare ATC fast-blow fuses (40 A)
- (1) Control cover with (2) machine screws
- (1) Weco 5-pin audio connector
- (1) Weco 2-pin power connector
- (4) #8 mounting screws

### MOUNTING THE AMPLIFIER...

The Kappa 202a can be mounted in virtually any location **inside** the vehicle. However, make sure to keep the amplifier away from heater vents or ducts.

1. At the chosen site, use the amplifier as a mounting template and mark locations of the four mounting holes.
2. Drill a small pilot hole at each marked location.
3. Mount the amplifier and securely tighten the mounting screws.

### WIRING THE AMPLIFIER...

Refer to Figure 7 (below) for details of the Kappa 202a's front and rear panel connections.

1. For power, remote, and speaker wires, strip  $\frac{1}{4}$ " off one end of each jacket to reveal bare wire for insertion into the Weco connectors.
2. Using the Weco 2-pin power connectors, connect individual black wires from the nearest bare-metal chassis component to each (-) terminal. Then, connect individual red wires from the vehicle's +12-volt battery terminal to each (+) terminal.

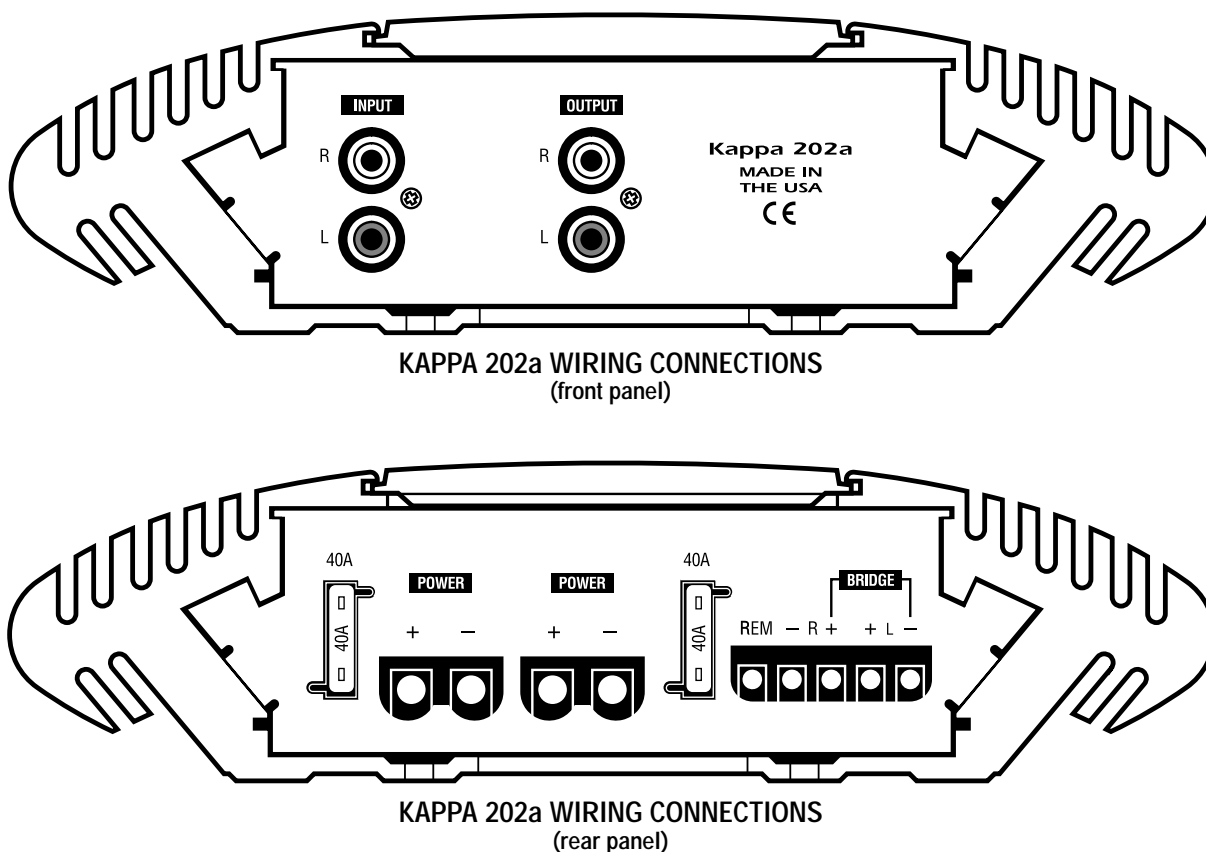


Figure 7. Wiring connections for the Kappa 202a amplifier.



## INSTALLATION (continued)

3. Make sure the wires are firmly seated in each Weco 2-pin connector and that each screw is completely tightened. Insert the wired connectors into the POWER sockets on the amplifier. Press each one in until it stops.
4. Using the Weco 5-pin connector, connect a blue wire from the source unit's remote connection to the REM terminal. Depending on polarity requirements (e.g., bridged-mono or tri-mode configurations – see Figures 1 through 3 on page 3), connect speaker wires from the speakers to the L and R (+ and –) terminals, as required by your system plan.
5. Make sure the wires are firmly seated in the Weco 5-pin connector and that each screw is completely tightened. Insert the wired Weco 5-pin connector into the 5-pin socket on the amplifier. Press it in until it stops.
6. Connect RCA cables from a source unit to the L and R INPUT jacks.

### SETTING THE Crossover...

**IMPORTANT:** If you plan to use the Kappa 202a to drive full-range speakers, set both AMP and AUX filters to FLAT (refer to Figure 1 on page 3 and Figure 8 below) and skip to the next section, "Setting Input Sensitivity".

1. Set the Crossover control to the frequency recommended by speaker manufacturer (refer to Figure 8). If the value is unknown, set the control midway.

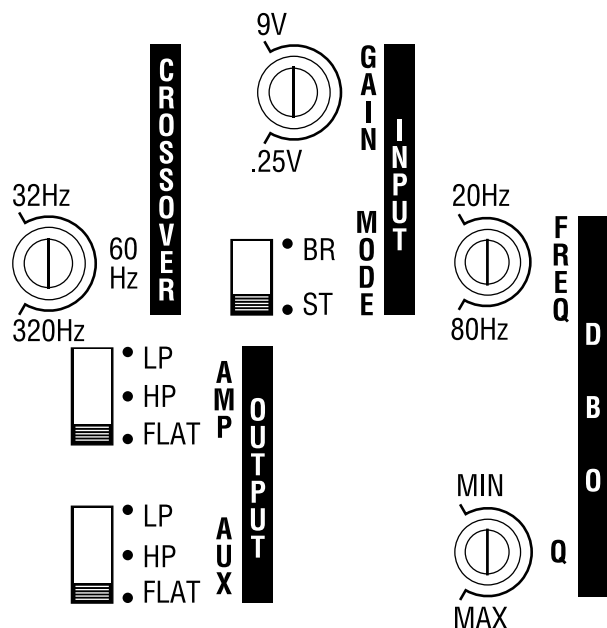


Figure 8. Kappa 202a controls for crossover, input, output, and DBO (Dynamic Bass Optimizer).

2. Depending on your system plan, set the AMP and AUX switches to LP (low-pass), HP (high-pass), or FLAT (refer to Figure 8).

### SETTING INPUT SENSITIVITY...

Initially, turn the input sensitivity GAIN control to its minimum (counter-clockwise) position (refer to Figure 8).

1. Reconnect the (–) negative lead to your vehicle's battery. Apply power to the audio system and play a favorite music track from CD or tape.

*NOTE:* After the source unit is on, green LEDs (on the top panel) will illuminate, indicating the amplifier is on. If not, check the wiring, especially the remote connection from the source unit. Also refer to "Troubleshooting" on the next page.

2. On the source unit, increase the volume control to maximum position. Slowly increase the GAIN control (clockwise) towards three o'clock and, at the same time, listen to the quality of the reproduced sound. At some point, you'll hear distortion on the music peaks. Stop the adjustment and turn it back slightly.

### SETTING DBO...

Dynamic Bass Optimizer (DBO) is a new approach to enhancing low-frequency reproduction in a vehicle. Conventional bass boost controls add bass at a fixed frequency and cause the amplifier to consume considerable power. DBO conserves valuable power at the lowest frequencies and allows you to adjust the level and "character" of the bass sound, instead of just the amount of boom.

Since a subwoofer in a tuned box is given to overexcursion below the tuned frequency, set the FREQ control below the box's resonant (tuned) frequency (see Figure 9 on the next page). Power typically wasted in this region will now be conserved and instead be available for frequencies the enclosure will reproduce. Use the Q control to boost the bass at the set frequency by as much as 12 dB (at MAX position – see Figure 9 on the next page).

For sealed enclosures, use DBO to enhance the output so it sounds more like a tuned box. This is a result of 12 dB of rolloff being added to the enclosure's rolloff and a flattening of frequency response (at the curve's knee) when Q is boosted.

For infinite baffles, set the FREQ control to the speaker's  $F_s$  value (to keep the subwoofer from trying to create bass below the resonant frequency) and adjust the Q control according to personal taste.

### INSTALLING THE CONTROL COVER...

After wiring and testing the Kappa 202a amplifier, install the control cover using the enclosed machine screws to deter tampering and help seal out dust.

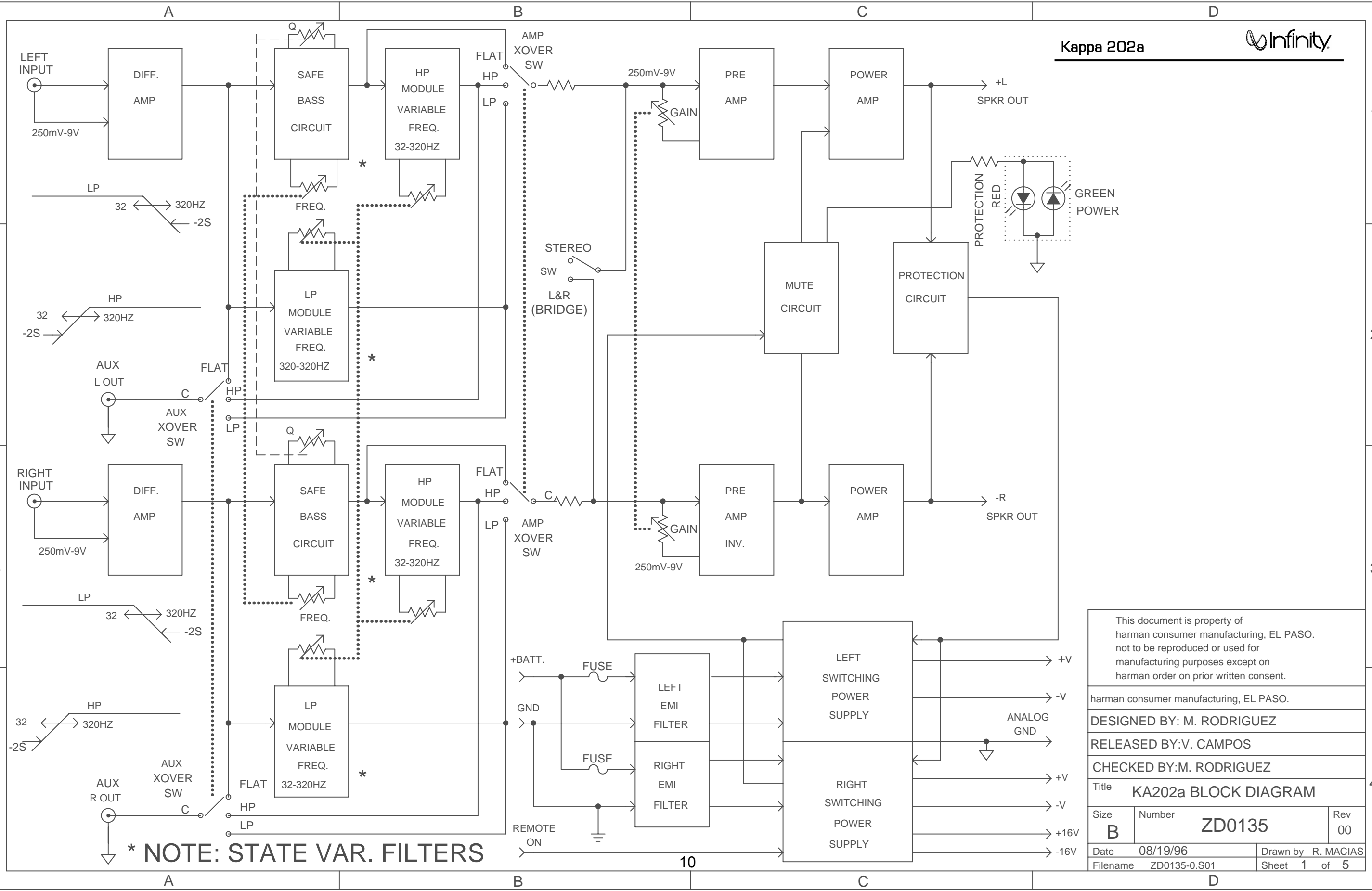
*NOTE:* Do not over-tighten the machine screws. Doing so may crack the cover.

## TROUBLESHOOTING

Use the following guide to identify symptoms and solve problems. Make sure the vehicle's electrical system is working properly and power is reaching the Kappa 202a (i.e., green LEDs on the top panel are on).

SYMPTOM	LIKELY CAUSE	SOLUTION
No audio	Low/No Remote Turn-On Voltage	Check connections; test turn-on voltage
	Speakers are not connected or are blown	Check wiring; use VOM/DVM to measure speaker coil impedance
Distorted audio	Input sensitivity and/or bass control is not set properly	See <i>Setting Input Sensitivity</i> and <i>Setting DBO</i> on previous page
Audio lacks "punch"	Speakers are wired with wrong polarity	Check polarity of connections; refer to <i>Applications</i> (page 3)

SYMPTOM	LIKELY CAUSE	SOLUTION
Audio cycles off and on; Amber protection LEDs (on top panel) are on	A protection circuit is turning the amplifier off and on	Verify the following—electrical system is between 10 ~ 15.5 Vdc; temperature is not over 194°F (90°C); no short circuits; speaker loads are not less than 1 ohm (2 ohms in mono)
Audio cycles off and on; Amber protection LEDs (on top panel) are on	GAIN is set too high	Set Input Sensitivity correctly (see previous page)
Fuse blows	Incorrect wiring or short circuit	Check connections; refer to <i>Applications</i> (see page 3)



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DESIGNED BY: M. RODRIGUEZ		
RELEASED BY: V. CAMPOS		
CHECKED BY: M. RODRIGUEZ		
Title KA202a BLOCK DIAGRAM		
Size B	Number ZD0135	Rev 00
Date 08/19/96	Drawn by R. MACIAS	
Filename ZD0135-0.S01	Sheet 1 of 5	

KAPPA 202A Electrical Parts List			
Part#	Description	Reference Designator	Qty
<b>SMD PWM MODULE</b>			
<i>Resistors</i>			
RS1700	SMD RES 1Kohm 5% 1/8W	R2,15,18	3
RS1701	SMD RES 10Kohm 5% 1/8W	R9,11	2
RS1702	SMD RES 100Kohm 5% 1/8W	R5	1
RS1703	SMD RES 2.2Kohm 5% 1/8W	R8	1
RS1705	SMD RES 4.7Kohm 5% 1/8W	R6,19	2
RS1709	SMD RES 680 ohm 5% 1/8W	R10	1
RS1710	SMD RES 3.3Kohm 5% 1/8W	R23	1
RS1711	SMD RES 220 ohm 5% 1/8W	R14	1
RS1717	SMD RES 100 ohm 5% 1/8W	R16,17	2
RS1724	SMD RES 6.8Kohm 5% 1/8W	R4	1
RS1733	SMD RES 510 ohm 5% 1/8W	R3	1
RS1783	SMD RES 12Kohm 5% 1/8W	R7	1
RS1826	SMD RES 27 ohm 5% 1/8W	R12,13	2
RS1878	SMD RES 10 ohm 5% 1/8W	R1	1
<i>Capacitors</i>			
CP1426	SMD CAP 0.1uF 20% 50V Z5U	C2,3,4,5,10	5
CP1434	SMD Cap 2.7nF 10% 100v X7	C1	1
CP1562	Cap Alum El. 330uF 20% 16	C6	1
CP1565	Cap Alum El. 22uF 20% 10v	C19	1
<i>Semiconductors</i>			
DI1132	SMD Diode Swch LL-34 Pkg	D1	1
IC1002	PWN Control Mod. 16 PIN TL494CN	IC1	1
TR1108	SMD Xstr NPN 50V/150mA 2SC4936	Q2	1
TR1134	NPN XSTR 40V/600mA SOT-89 PXT2222A	Q3,4	2
TR1135	PNP XSTR 60V/600MA SOT-89 PXT2907A	Q1,5,6	3
TY1000	SCR MCR-22 TO-92 Package T/R	SCR1	1
<i>Miscellaneous</i>			
CO1249	CONNECTOR HEADER R/A 5-P	P1	1
CO1267	CONNECTOR HEADER R/A 2-P	P2,3,4	3
SA0000032	Ferrite Bead (CC1025)	FB1	1
<b>SMD LP/HP FILTER</b>			
<i>Resistors</i>			
RS1701	SMD RES 10Kohm 5% 1/8W	R1-7,12-18,22,23	16
RS1702	SMD RES 100Kohm 5% 1/8W	R20,21	2
RS1703	SMD RES 2.2Kohm 5% 1/8W	R8-11	4
RS1779	SMD RES ZERO ohm 5% 1/8W JUMPER	J1-4	4
RS2084	Pot Carbon 20Kohm 20% Lin	VR	1
<i>Capacitors</i>			
CP1177	Cap Poly Film 0.22uF 5% 6	C1,2,9,10	4
CP1426	SMD CAP 0.1uF 20% 50V Z5U	C5,6,7,8	4
<i>Semiconductors</i>			
IC1041	IC SMD Dual Op-Amp J-FET-TL072	IC3	1
IC1162	IC SMD Quad-J Fet TL074	IC1,2	2

Part#	Description	Reference Designator	Qty
<b>SMD LP/HP FILTER</b>			
<i>Miscellaneous</i>			
CO1247	CONNECTOR HEADER R/A 8-P	HD3	1
CO1267	CONNECTOR HEADER R/A 2-P	HD4	1
CO1279	CONNECTOR HEADER R/A 3-P	HD1	1
CO1280	CONNECTOR HEADER R/A 4-P	HD2	1
CO1304	Header Stght 2-Pos 0.079"	CONN1	1
SW1073	Switch Slide 2P3T Horizon	SW2,3	2
WA1082	Washer Plain Nylon OD=0.2	VR	1
XX1264	Shaft 4-Gang Anodized	VR	1
<b>SMD PREAMP/DRIVER MODULE</b>			
<i>Resistors</i>			
RS1700	SMD RES 1Kohm 5% 1/8W	R3,12,23,32	4
RS1701	SMD RES 10Kohm 5% 1/8W	R4,18,19,24,38,39,44,46,49	9
RS1703	SMD RES 2.2Kohm 5% 1/8W	R10,11,30,31,52,53	6
RS1705	SMD RES 4.7Kohm 5% 1/8W	R2,22	2
RS1706	SMD RES 47Kohm 5% 1/8W	R41	1
RS1717	SMD RES 100 ohm 5% 1/8W	R17,20,37,40	4
RS1721	SMD RES 2 Kohm 5% 1/8W	R43,45,48,50	4
RS1722	SMD RES 470 ohm 5% 1/8W	R15,16,35,36	4
RS1725	SMD RES 15Kohm 5% 1/8W	R6,9,26,29	4
RS1783	SMD RES 12Kohm 5% 1/8W	R51	1
RS1831	SMD RES 7.5Kohm 5% 1/8W	R7,8,27,28	4
RS1918	SMD RES 9.1Kohm 5% 1/8W	R1,21	2
RS1983	SMD RES 560 ohm 5% 1/8W	R42,47	2
RS2090	Pot. 20Kohm 20% Cermet Li	VR1	1
<i>Capacitors</i>			
CP1411	Cap Alum El. 100uF 20% 16	C34,35	2
CP1412	Cap Alum El. 47uF 20% 16v	C27,28,33,42	4
CP1417	Cap Alum El. 22uF 20% 16	C25,31	2
CP1426	SMD CAP 0.1uF 20% 50V Z5U	C4,5,10,11,21,22,29,30,36,37-39	12
CP1475	SMD Cap 33pF 5% 50v NPO 1	C3,6,12,13,16,17,26,32,40,41	10
CP1496	SMD CAP 100pF 10% 50V X7R	C7,18	2
CP1520	SMD CAP. .01uF 10% 50V T/	C2,15,23,24	4
CP1557	SMD Cap 56pF 5% 50v NPO	C8,8,19,20	4
CP1563	SMD Cap 150pF 5% 50v NPO	C1,14	2
<i>Semiconductors</i>			
IC1175	IC High Performance Dual Op-Amp NJM5532	IC1,2,3	3
TR1108	SMD Xstr NPN 50V/150mA 2SC4936	Q2,7	2
TR1125	SMD Xstr PNP 50V/150mA 2SA1781	Q3,8	2
TR1131	SMD Xstr NPN 50v/100mA 2SC5839	Q1,6	2
TR1166	PNP Xstr 150v/600mA TO-92 2N5401	Q4,9	2
TR1167	NPN Xstr 160v/600mA TO-92 2N5551	Q45,10	2
DI1132	SMD Diode Swch LL-34 Pkg	D1,2	2
<i>Miscellaneous</i>			
CO1248	CONNECTOR HEADER R/A 6-P	HD3	1
CO1267	CONNECTOR HEADER R/A 2-P	HD2	1
CO1279	CONNECTOR HEADER R/A 3-P	HD1	1
CO1280	CONNECTOR HEADER R/A 4-P	HD4	1
SW1072	Switch Slide 2P2T Horizon	SW1	1
WA1082	Washer Plain Nylon OD=0.2	VR1	1
XX1264	Shaft 4-Gang Anodized	VR1	1

Part#	Description	Reference Designator	Qty
<b>MAIN PCB</b>			
<i>Resistors</i>			
RS1700	SMD RES 1Kohm 5% 1/8W	R40,42,43	3
RS1701	SMD RES 10Kohm 5% 1/8W	R22,22A,24,24A,29,31,39,41,68,71,72,73	12
RS1702	SMD RES 100Kohm 5% 1/8W	R30	1
RS1703	SMD RES 2.2Kohm 5% 1/8W	R34,52	2
RS1704	SMD RES 22Kohm 5% 1/8W	R74	1
RS1705	SMD RES 4.7Kohm 5% 1/8W	R23,23A,37,75,76,77,78	7
RS1706	SMD RES 47Kohm 5% 1/8W	R25,25A,38	3
RS1717	SMD RES 100 ohm 5% 1/8W	R1,1A,2,2A,3,3A,4,4A,5,5A,6,6A	12
RS1725	SMD RES 15Kohm 5% 1/8W	R69,69A,70,70A	4
RS1831	SMD RES 7.5Kohm 5% 1/8W	R7,7A	2
RS1868	RES CER 0.1 ohm 5% 5W	R16,16A,17,17A,18,18A,19,19A,20,20A,21,21A	12
RS1871	SMD RES 5.1Kohm 5% 1/8W	R8,8A	2
RS1878	SMD RES 10 ohm 5% 1/8W	R26,26A	2
RS1898	SMD RES 10Kohm 1% 1/8W	R61,67	2
RS1902	RES C/F 33 ohm 5% 1/4W	R9,9A	2
RS1916	RES C/F 5.1 ohm 5% 1/4W	R10,10A,11,11A,12,12A,13,13A,14,14A,15,15A	12
RS1946	SMD RES 49.9Kohm 1% 1/8W	R44,57,62,63	4
RS1957	SMD RES 4.99Kohm 1% 1/8W	R60,66	2
RS2113	SMD RES 24.9Kohm 1% 1/8W	R58,59,64,65	4
<i>Capacitors</i>			
CP1126	CAP POLY FILM 1uF 10% 50V	C3,3A	2
CP1355	Cap Alum El. 2200uF 20% 2	C1,1A,2,2A	4
CP1412	Cap Alum El. 47uF 20% 16v	C14	1
CP1415	Cap Alum El. 2.2uF 20% 50	C34,35,37,38	4
CP1417	Cap Alum El. 22uF 20% 16	C26-29	4
CP1426	SMD CAP 0.1uF 20% 50V Z5U	C8,11,11A,13,15,15A,16,16A,18,20-23,39,39A,40,40A,41,41A,42,42A,43,43A,47-50	27
CP1475	SMD Cap 33pF 5% 50v NPO 1	C30-33	4
CP1496	SMD CAP 100pF 10% 50V X7R	C9,9A,10,10A	4
CP1520	SMD CAP. .01uF 10% 50V T/	C36	1
CP1545	CAP ALUM ELECT 4700uF 20%	C4,4A,5,5A	4
CP1546	Cap Alum El. 1000uF 20% 5	C6,6A,7,7A	4
CP1552	SMD Cap .1uF 20% 100v Z5U	C12,12A,17,17A	4
CP1562	Cap Alum El. 330uF 20% 16	C19	1
CP1631	Cap. Alum El 220uF 20% 35	C24,25	2
<i>Semiconductors</i>			
DI1005	Rectifier Diode 3A/200V	D1,1A,2,2A	4
DI1010	Diode Fast Rect. 1A/100v	D5-8	4
DI1053	Rect Dual Comm Cathd. 16A	D3,3A	2
DI1054	Rect Dual Comm Anode 16A	D4,4A	2
DI1132	SMD Diode Swch LL-34 Pkg	D9,10,12-16,16A	8
DI1167	SMD Zener 16v 5% CP Pkg.	Z1,2	2
IC1041	IC SMD Dual Op-Amp J-FET-TL072	IC1,2	2
TR1063	NPN Xstr 40v/600mA TO-92 MPS2222A	Q7,7A	2
TR1108	SMD Xstr NPN 50V/150mA 2SC4936	Q19,27	2
TR1125	SMD Xstr PNP 50V/150mA 2SA1781	Q18,20,28	3
TR1131	SMD Xstr NPN 50v/100mA 2SC5839	Q17	1
FE100440112	FET Pwr 60v/35A/28mohm IRFZ44	Q1,1A,2,2A,3,3A,4,4A,5,5A,6,6A	12
TR1183	NPN Pwr Xstr 3A/100v/40W TIP31C	Q8,8A,26	3
TR1184	PNP Pwr Xstr 3A/100v/40W TIP32C	Q9,9A,25	3
TR1209	SMD Xstr 80v/50mA SOT23/S 2SC3906	Q16,16A	2
TR1057	NPN Pwr Xstr 25A/100V TIP35C	Q10,10A,11,11A,12,12A	6
TR1061	PNP Pwr Xstr 25A/100V TIP36C	Q13,13A,14,14A,15,15A	6
<i>Miscellaneous</i>			
BR1344	BUS BAR COPPER 3-TERMINAL	BB10,12,15,18,19	5

Part#	Description	Reference Designator	Qty
<b>MAIN PCB</b>			
BR1369	Bus Bar Copper 7 Term. 63	BB1,3	2
BR1372	Bus Bar 2 Terminals 1000	BB2,5-9,11,13,16,17	
CC1028	Ferrite Bead	FB1,1A,2,2A,3,3A,4,4A,5,5A,6,6A,7,7A,8,8A	16
CO1315	Power Connector Pin Gold	POWER1,2	2
CO1316	Speaker Connector Pin Gol	SPKR OUT	
CO1318	RCA Jack Dual Separate Gn	INPUT, AUX OUT	
MD0312011	LP/HP Fil KA54a/255a/102a	M2	
MI1100	Inductor Air Core 0.38uH	L2,2A	2
SA0000030	Ferrite Bead (CC1028)	FB9,9A,10,10A	4
TE1110	Terminal Pocket	SPKR OUT +L, -R	
TE1178	Faston Female 0.032" x 0.	CLIP1-6	6
TH1006	NTC THERMISTOR 10Kohm @	TH1	
WI1592	Wire #16 26x30 UL1007 Whi	SPKR OUT +L	
WI1667	Wire #16 26x30 UL1007 Gra	SPKR OUT -R	
<b>SAFEBASS MODULE</b>			
<i>Resistors</i>			
RS1790	SMD RES 2.7Kohm 5% 1/8W	R3,6	2
RS1962	SMD RES 62Kohm 5% 1/8W	R2,5	2
RS2083	Pot. Carbon 2Kohm 20% Lin	VR1A,VR1C	2
RS2085	Pot Carbon 200Kohm 20% Li	VR1B,VR1D	2
RS2286	Pot Carbon 500 ohm 20% Li	VR2A,VR2B	2
RS2308	SMD RES 620 ohm 5% 1/8W	R1,4	2
<i>Capacitors</i>			
CP1177	Cap Poly Film 0.22uF 5% 6	C2,4	2
CP1426	SMD CAP 0.1uF 20% 50V Z5U	C5,6	2
CP1625	Cap Poly Film 0.47uF 5% 6	C1,3	2
<i>Semiconductors</i>			
IC1041	IC SMD Dual Op-Amp J-FET-TL072	IC1	1
<i>Miscellaneous</i>			
CO1267	CONNECTOR HEADER R/A 2-P	HD2,3	
CO1279	CONNECTOR HEADER R/A 3-P	HD1	
WA1082	Washer Plain Nylon OD=0.2		
XX1264	Shaft 4-Gang Anodized		
<b>LAMP MODULE</b>			
RS1705	SMD RES 4.7Kohm 5% 1/8W	R1,2	2
DI1132	SMD Diode Swch LL-34 Pkg	D1,2	2
TR1134	NPN XSTR 40V/600mA SOT-89 PXT2222A	Q1,2	2
CO1331	Header Right Angle 3-Pos	CONN1,2	2
LA1028	Pilot Lamp 0 3mm. 14v @ 4	LAMP1-8	8
XX1140	Filter Green for 0 3mm. L	LAMP2,4,5,7	4
XX1268	Filter Orange; 3.0mm Lamp	LAMP1,3,6,8	4
<b>MISC/MECHANICAL</b>			
BR1364	Rear Bracket Kappa 102a/2		
BR1365	Transistor Bar TO-220 (8x		
BR1377	Front Bracket KA202a		
BR1380	Transistor Bar TO-218 (12		
BR1385	Bus Bar Copper 4 Term. 10		
CC1025	Ferrite Bead		
CO1305	Housing 2-Pos 0.079"		

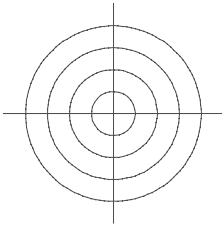
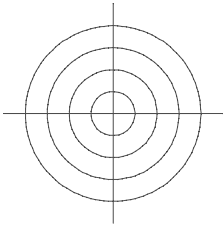
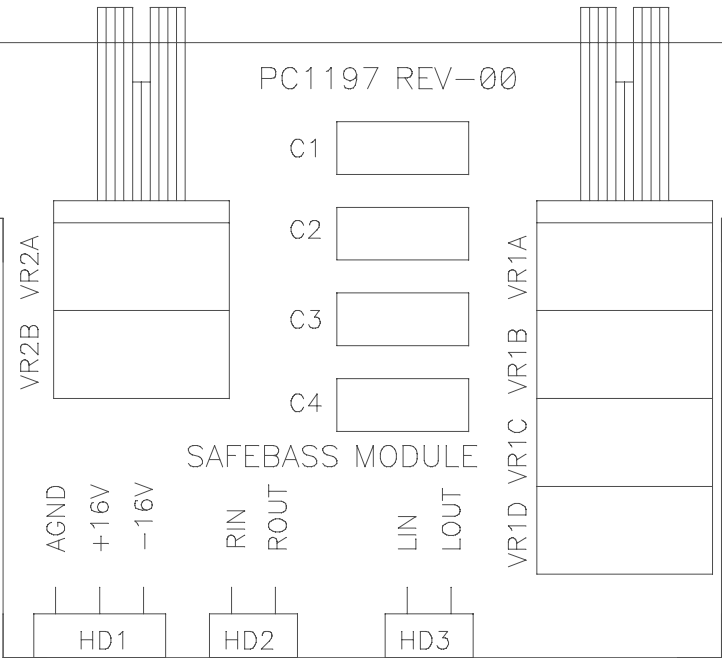
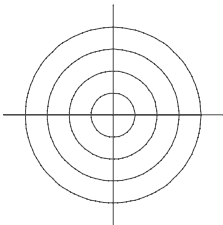
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TOP SILKSCREEN

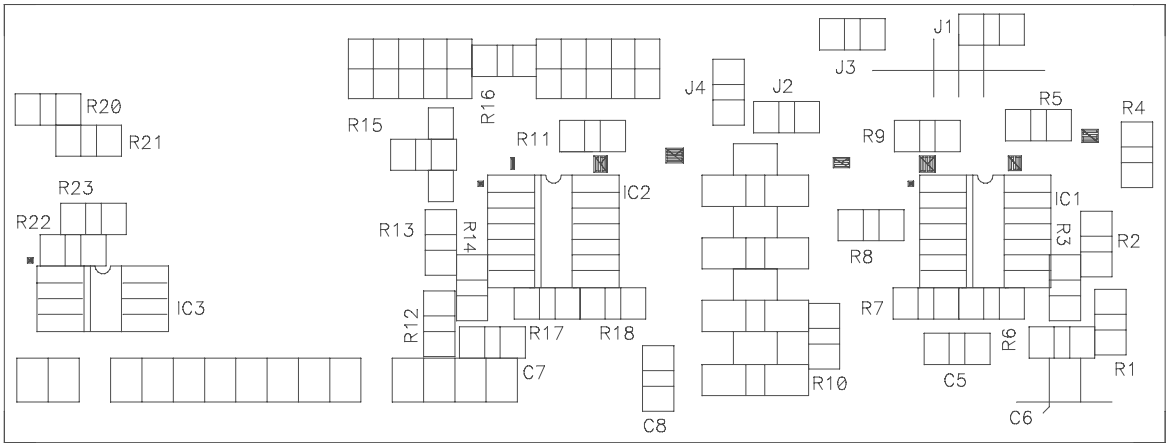
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SHEET 2 OF 11



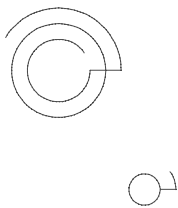
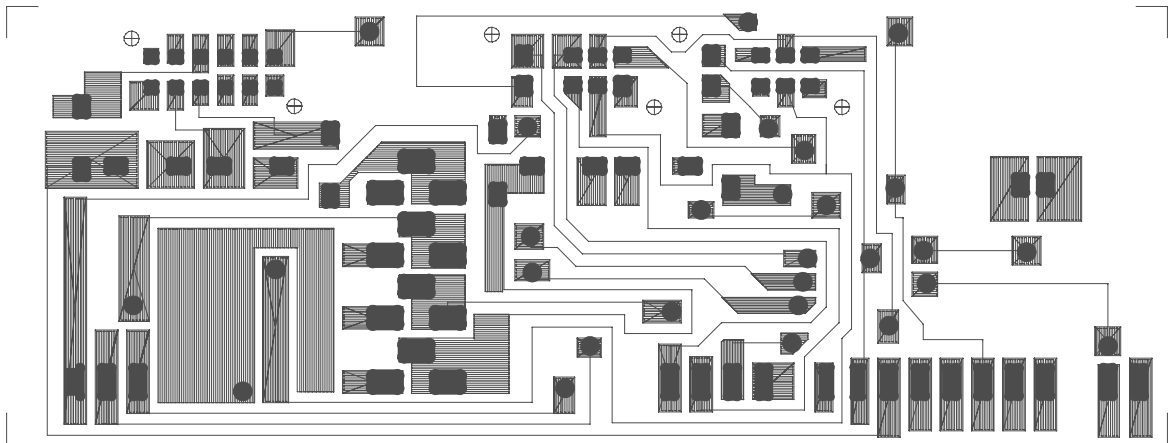
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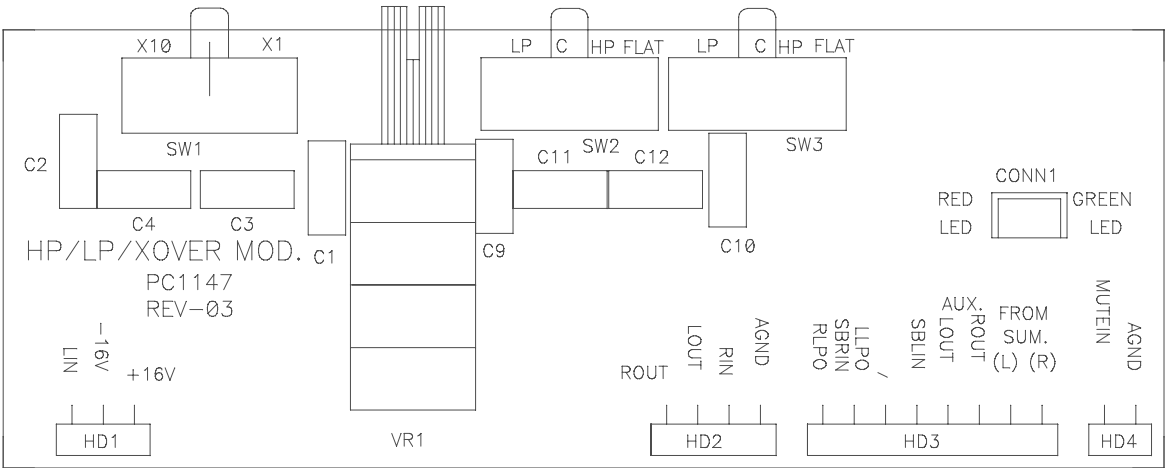
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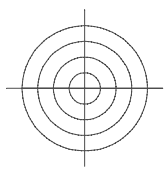
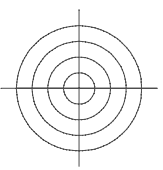
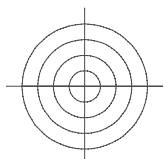
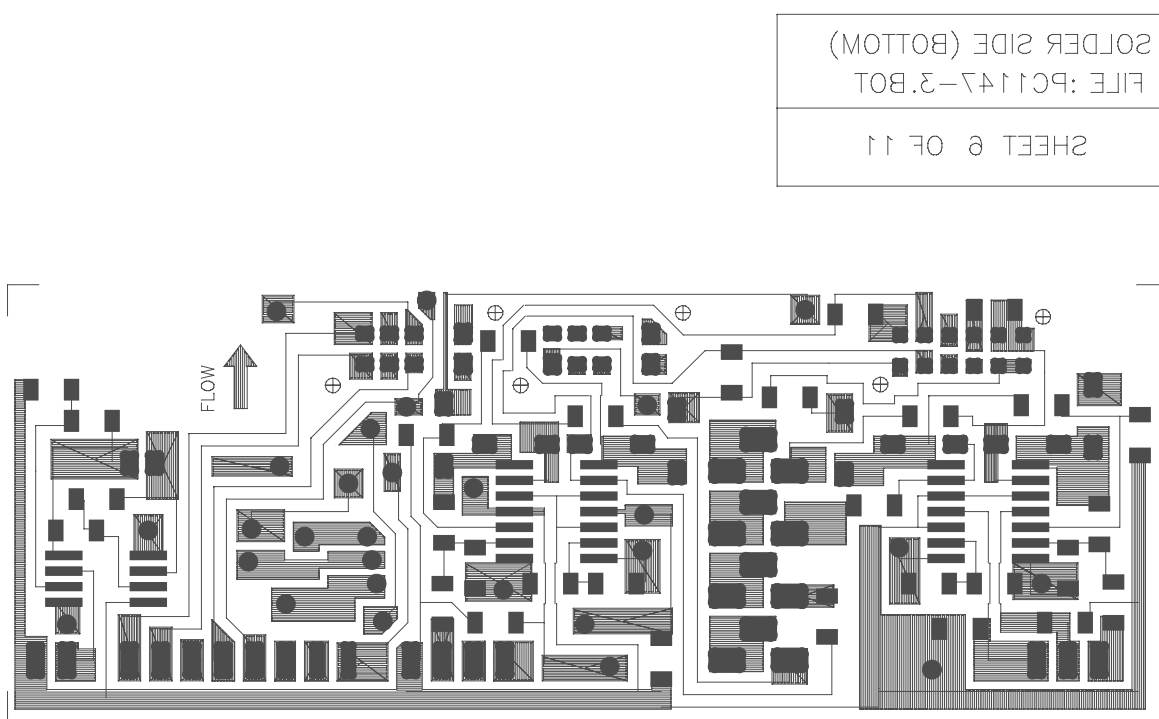
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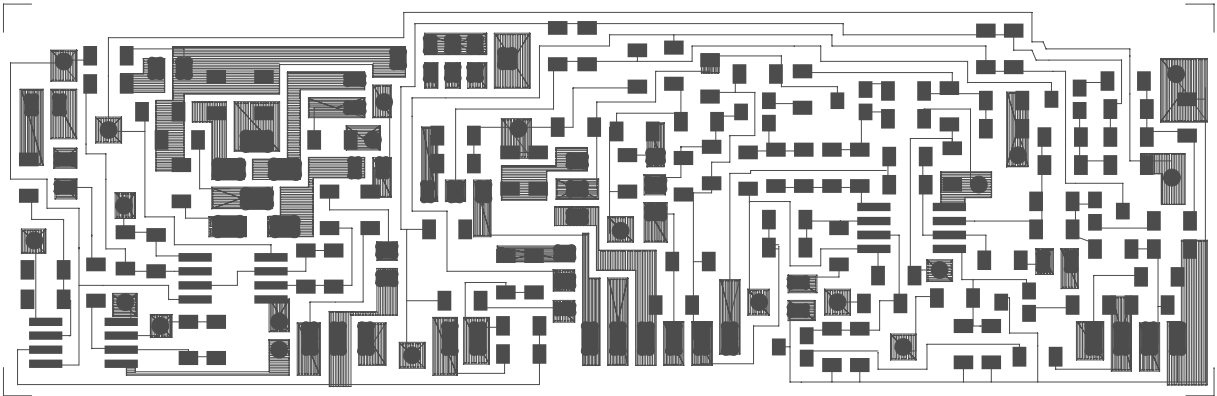
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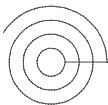
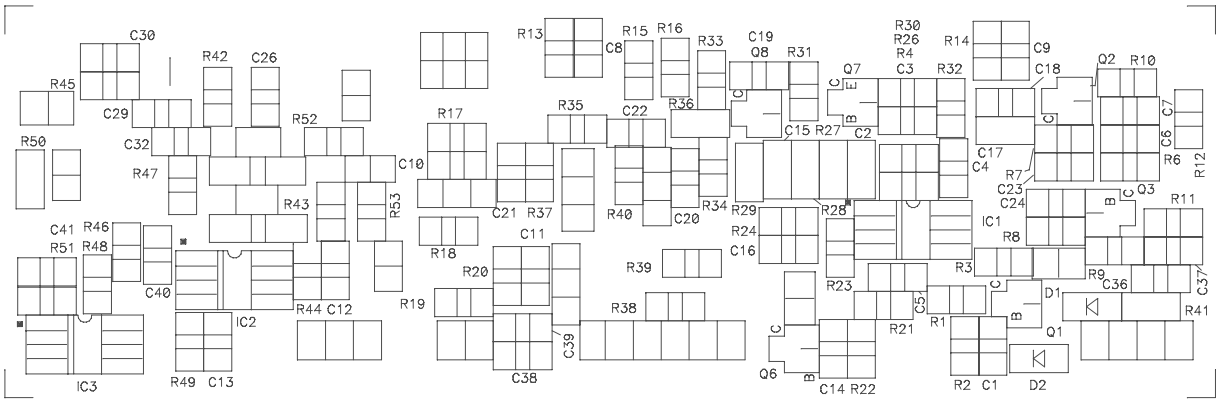




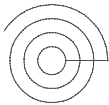
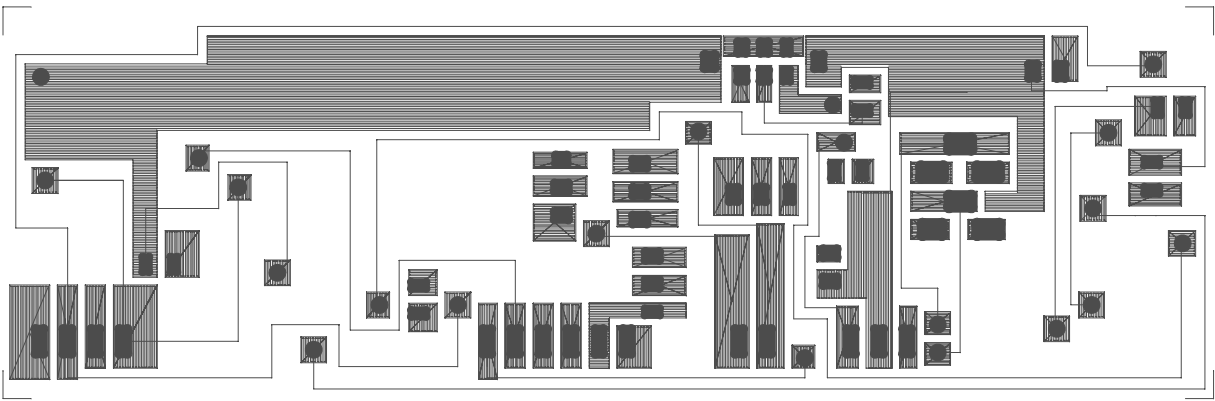
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SOLDER SIDE (BOTTOM)  
6



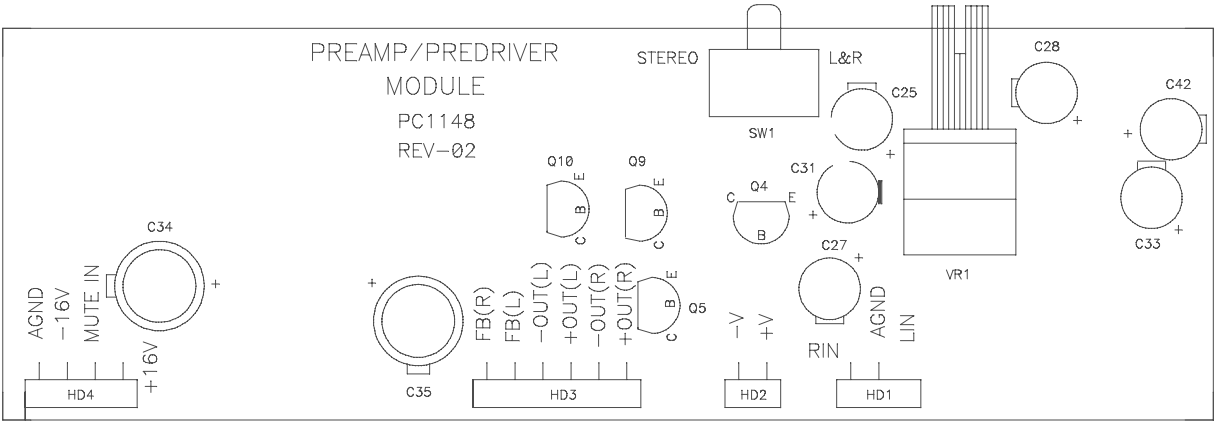
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BOTTOM SILKSCREEN  
5



COMPONENT SIDE (TOP)  
FILE :PC1148-2.TOP  
SHEET 3 OF 11



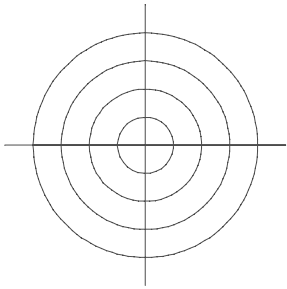
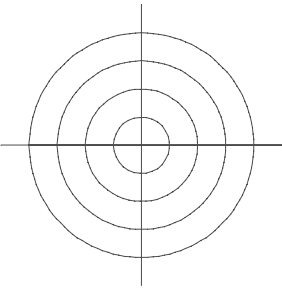
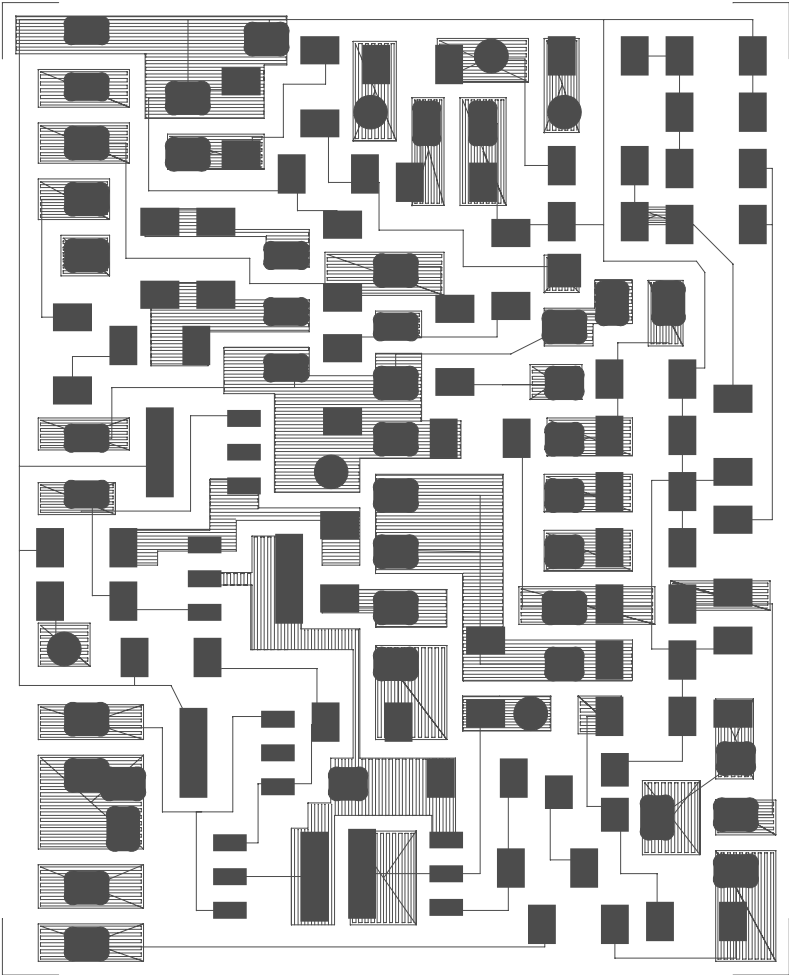
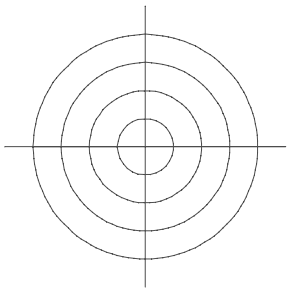
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SHEET 2 OF 11

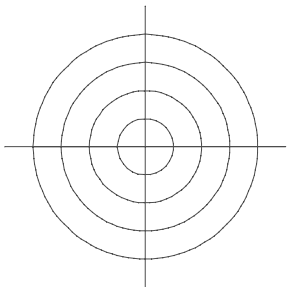


SOLDER SIDE (BOTTOM)

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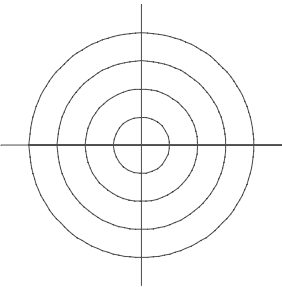
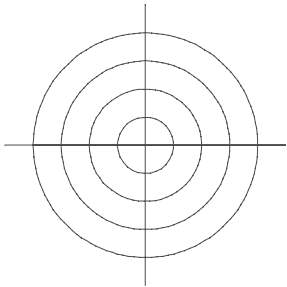
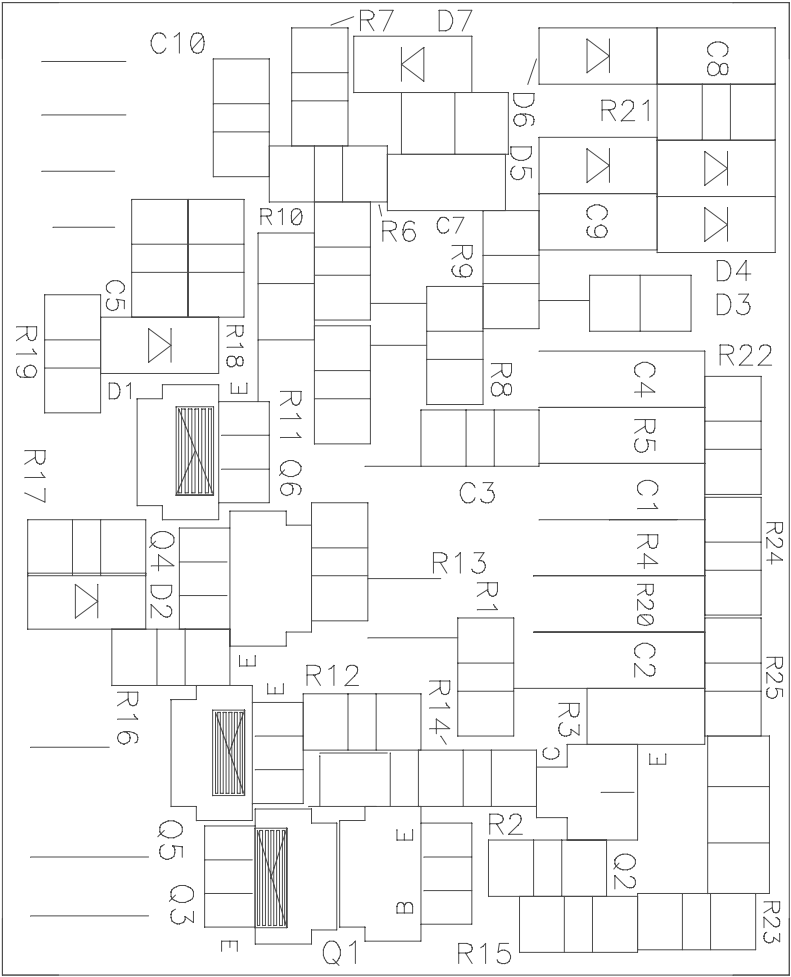
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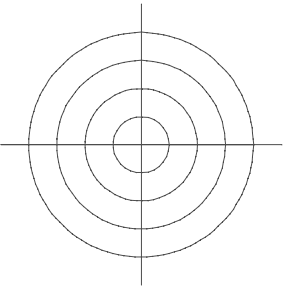




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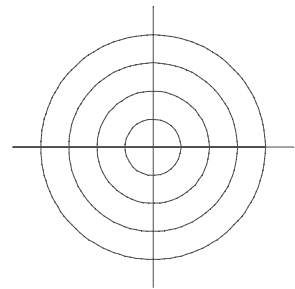
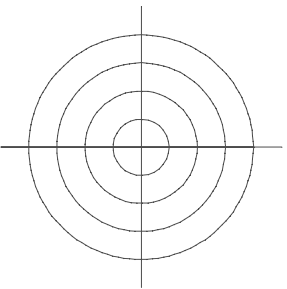
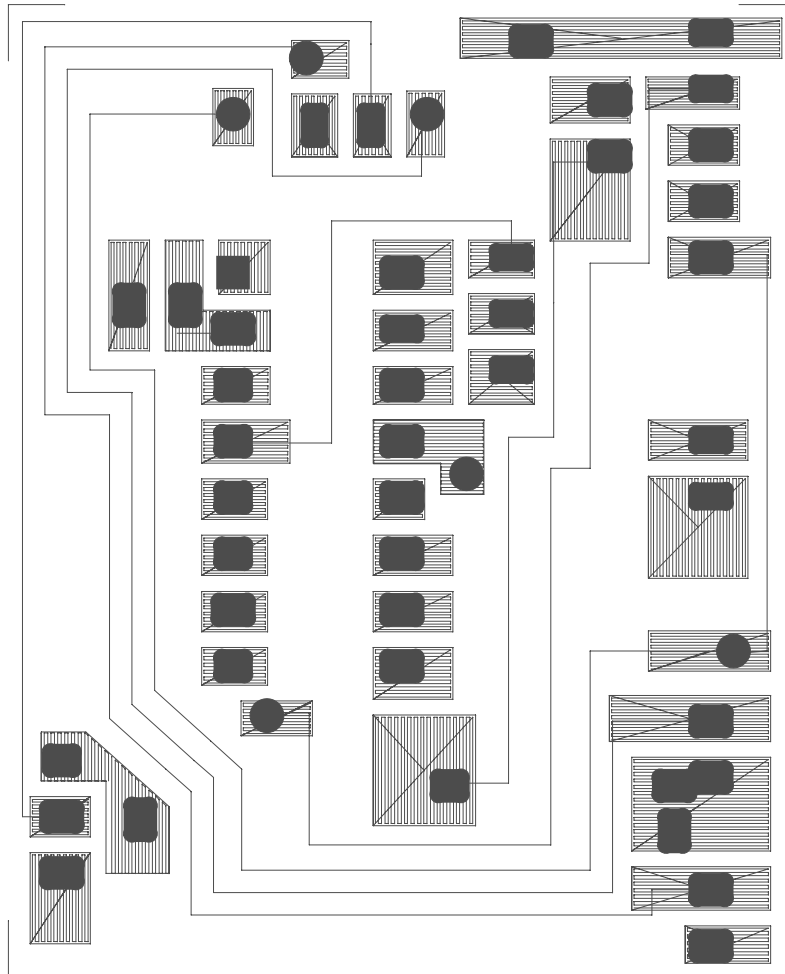
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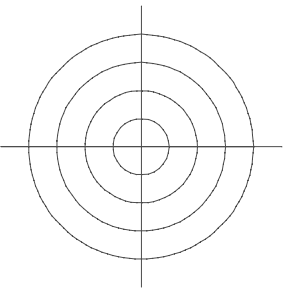




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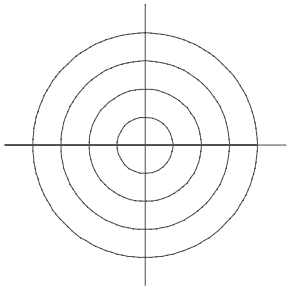
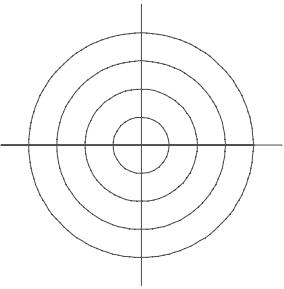
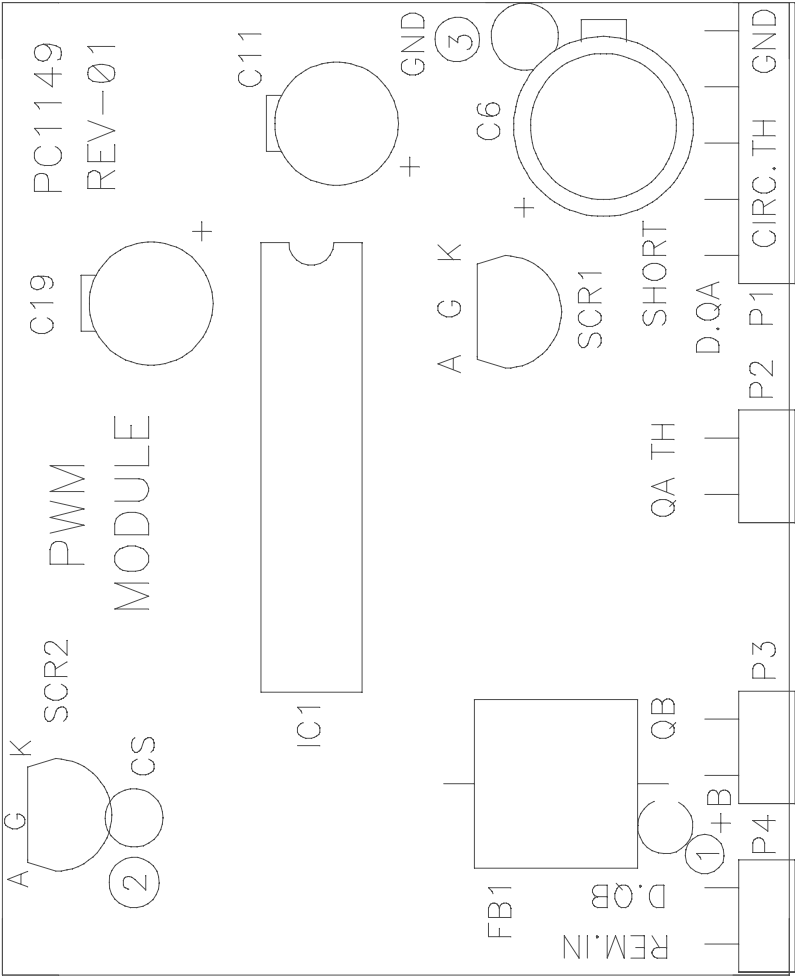
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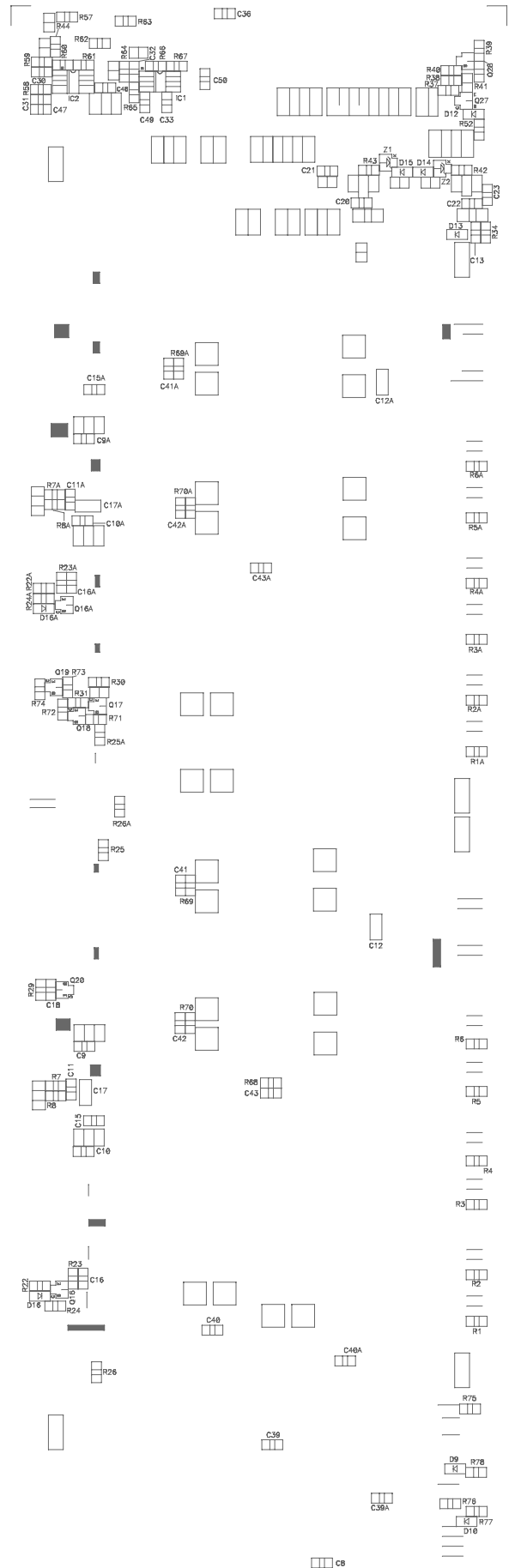
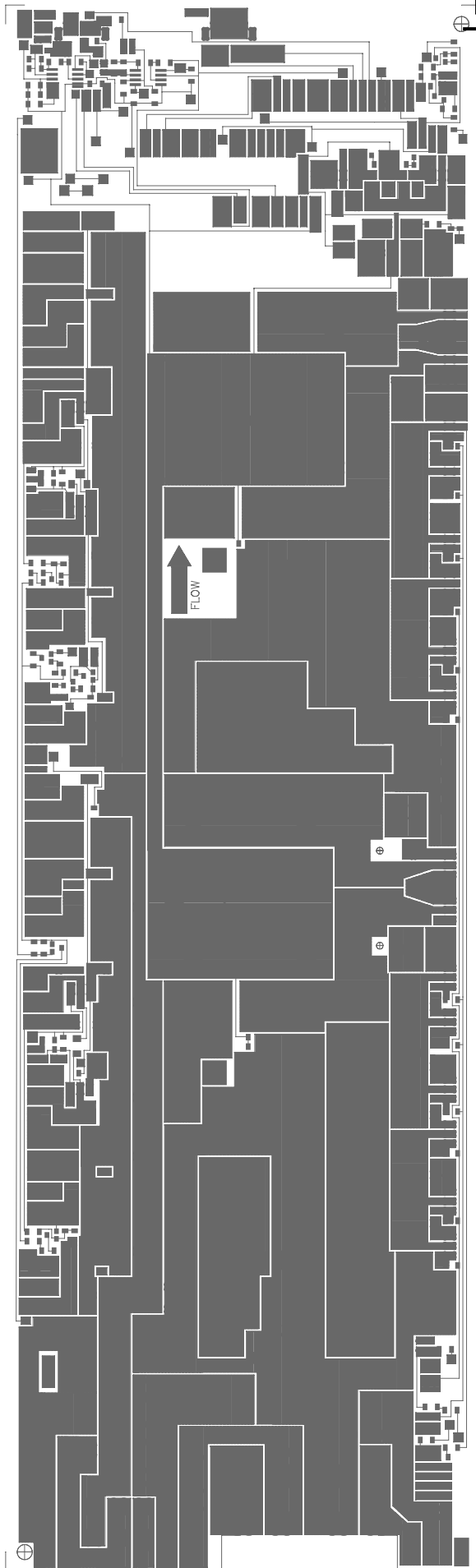


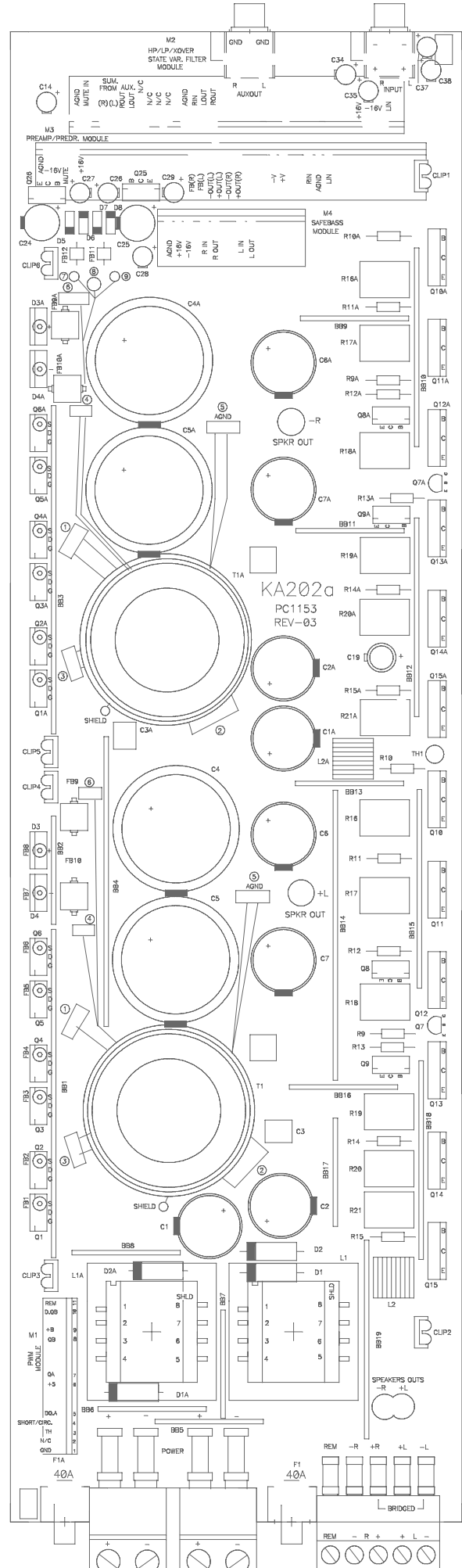
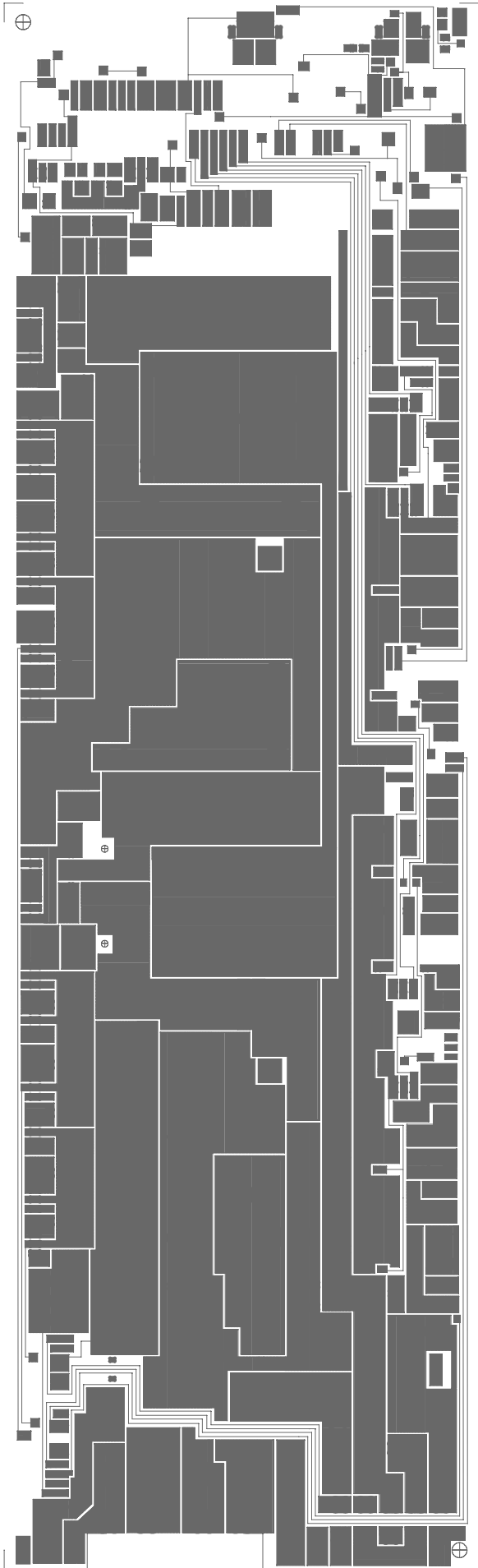
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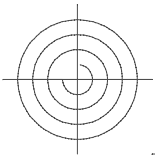
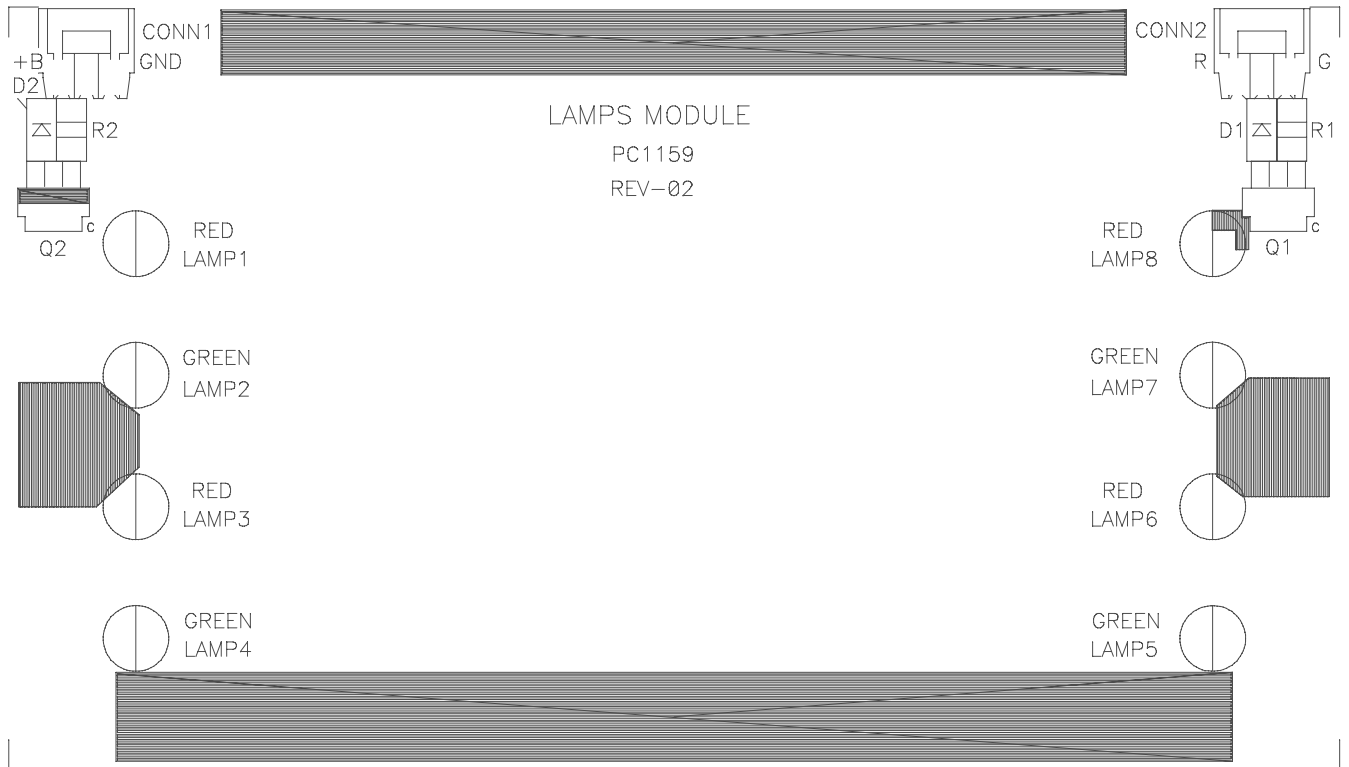
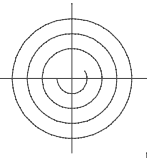
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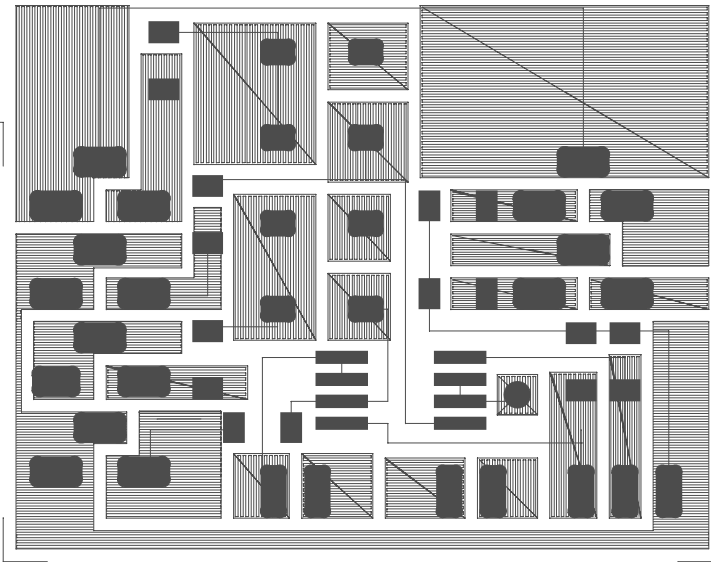
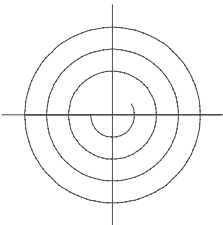




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20LDER SIDE (BOTTOM)

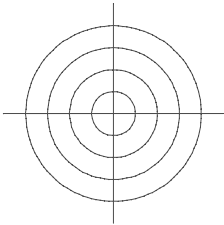
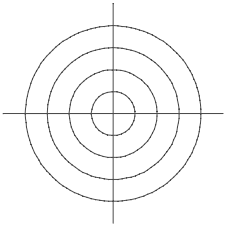
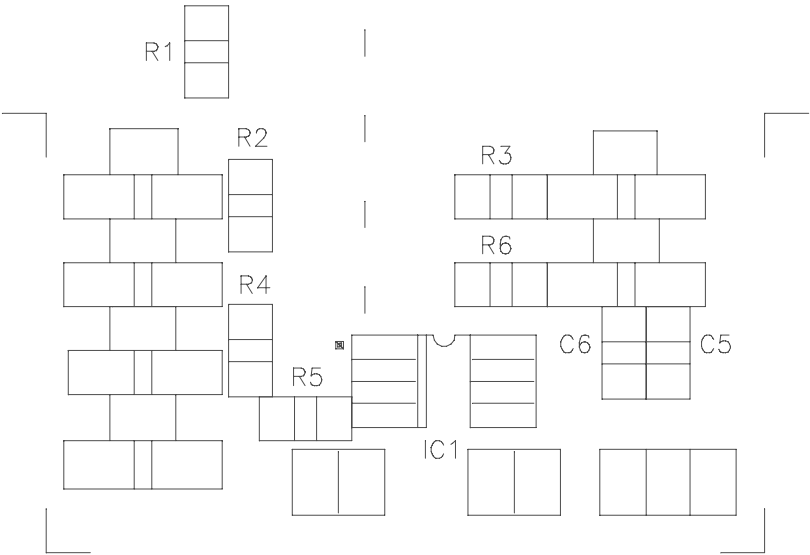
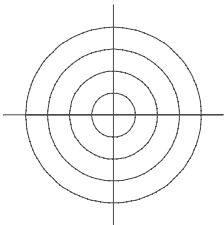
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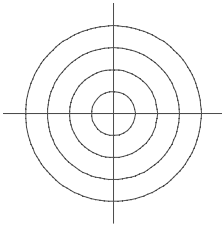
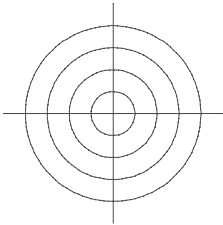
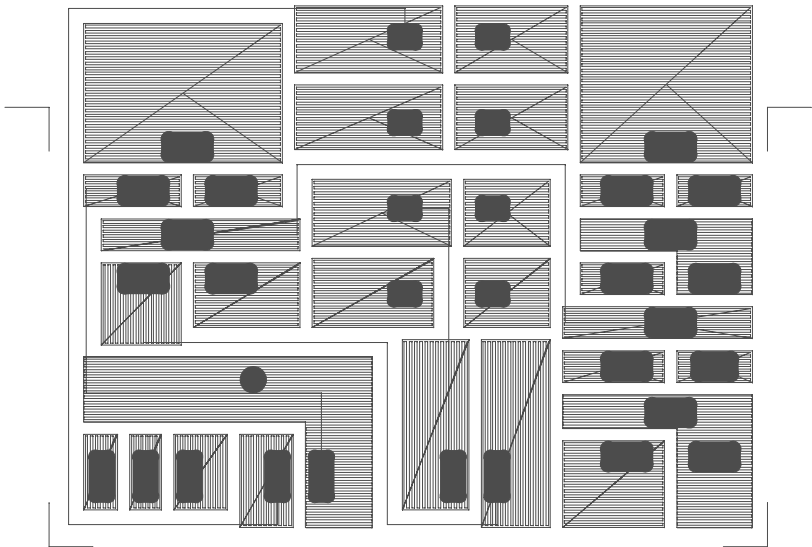
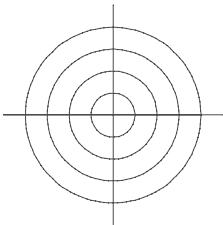
BOTTOM SILKSCREEN

SHEET 2 OF 11



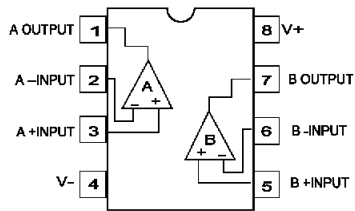
COMPONENT SIDE (TOP)  
FILE :PC1197-0.TOP

SHEET 3 OF 11

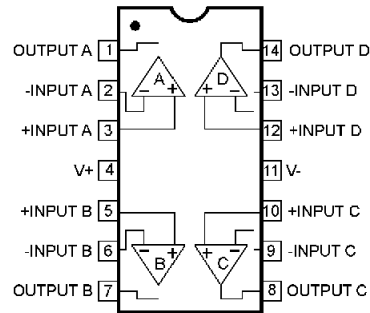


## Semiconductors

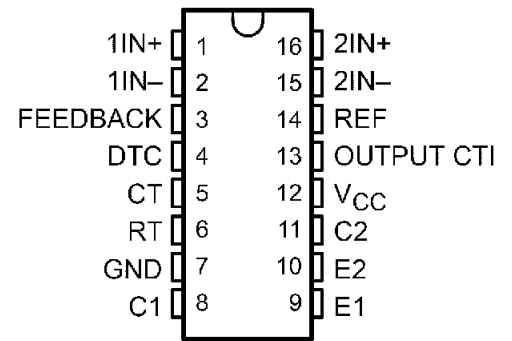
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**TL072**  
**DUAL OP-AMP**



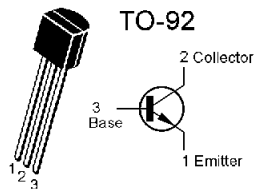
**TLO74**  
**QUAD OP-AMP**



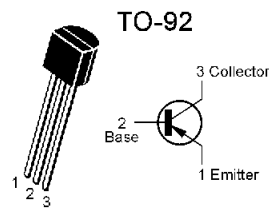
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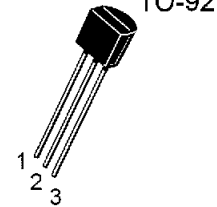
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**2N5551**



**2N5401**

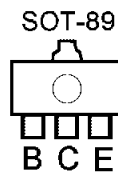
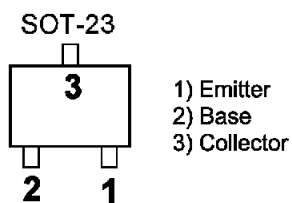


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**SCR**

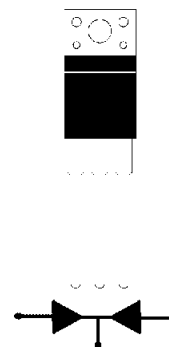


1	Cathode
2	Gate
3	Anode

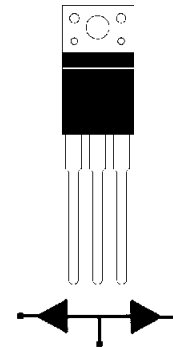
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**RTX2907A** **2SC5839**  
**RTX2222A** **2SC3906**  
**2SC2412K**



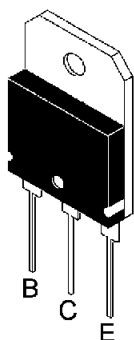
**FEP16**  
**DUAL DIODE**  
**TO-220**



**FEN16**  
**DUAL DIODE**  
**TO-220**



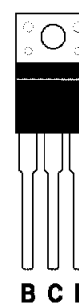
**TIP35C, TIP36C**  
**TO-218**



**IRFZ44**  
**TO-220**



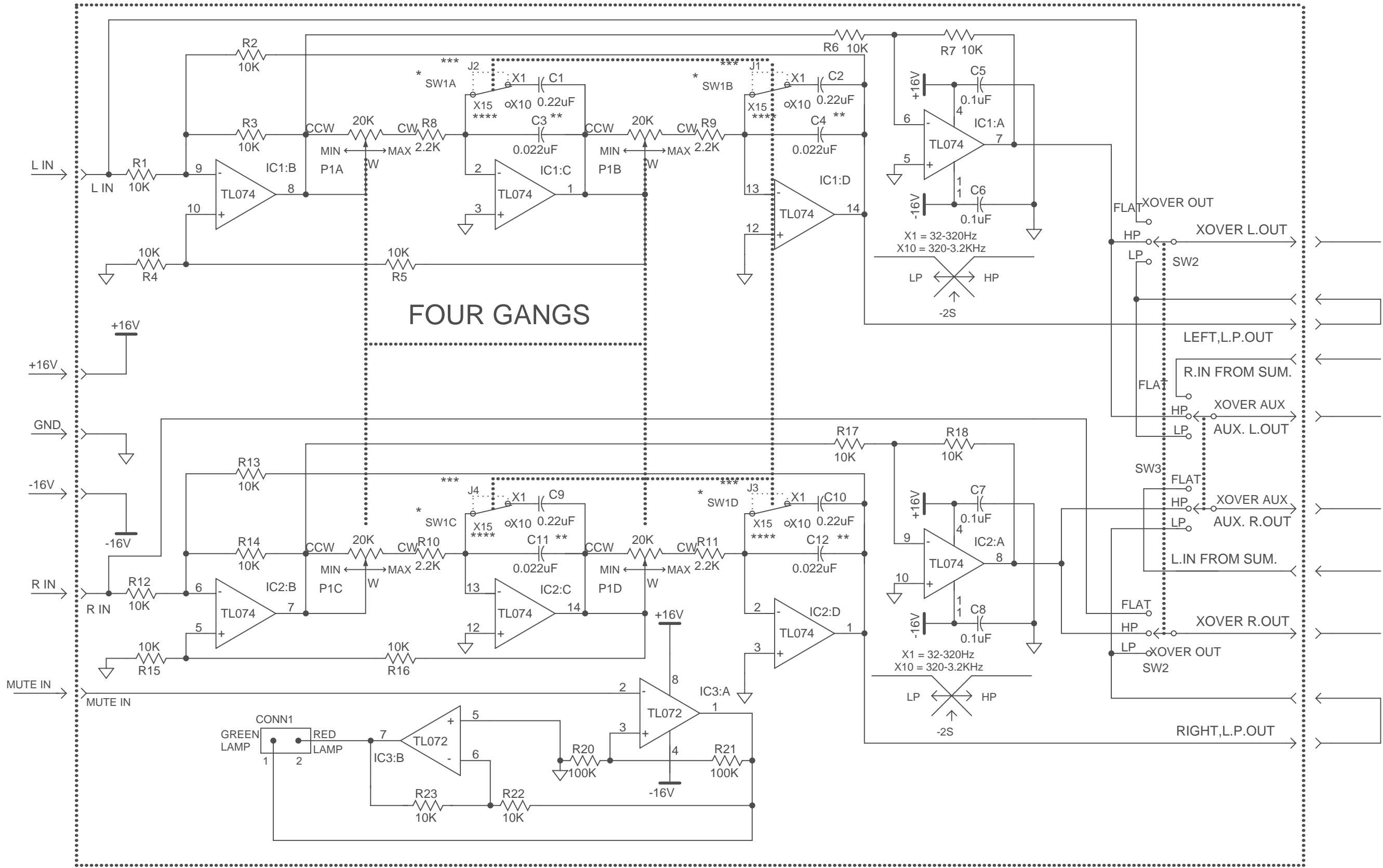
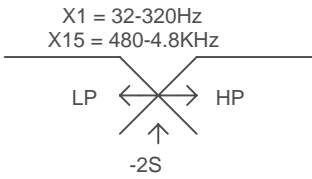
**TIP31C**  
**TIP32C**  
**TO-220**



KA'S MODEL						
	*SW1	**C3,4,11,12	***J1,2,3,4	SW3	CONN1	NOTES
KA52a	YES	YES	NOT	YES	YES	MA0043
KA102a	NOT	NOT	YES	YES	YES	MA0054
KA202a	NOT	NOT	YES	YES	YES	MA0054
KA54a	NOT	NOT	YES	YES	YES	MA0054 FRONT
KA54a	NOT	NOT	YES	NOT	NOT	MA0066 REAR
KA255a	YES	YES	NOT	NOT	YES	MA0077 FRONT
KA255a	NOT	NOT	YES	NOT	NOT	MA0066 FRONT

KAPPA MODEL KA52a ONLY	
C1,C2,C9,C10	C3,C4,C11,C12
0.15uF	0.015uF

KAPPA MODEL KA255a ONLY	
C3,C4,C11,C12	
0.015uF	



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DESIGNED BY: MANUEL RODRIGUEZ

CHECKED BY: V. CAMPOS

RELEASED BY: MANUEL RODRIGUEZ

Title XOVER HP/LP STATE VARIABLE FILTER

Size C Number ZD0147

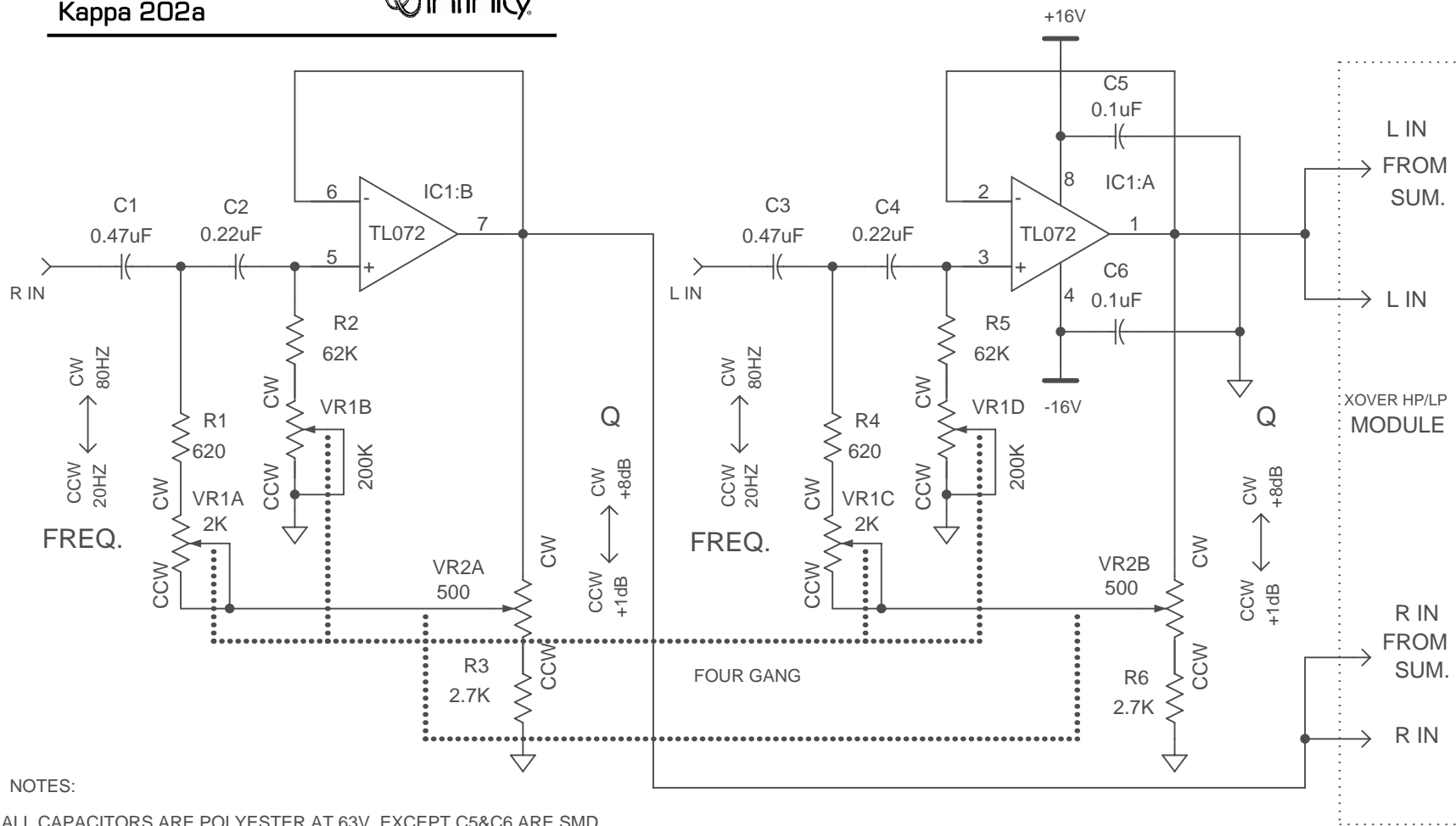
Rev 03

Date 01/19/97 Drawn by R. MACIAS

Filename ZD0147-3.S01 Sheet 1 of 2



Kappa 202a



MATES WITH PCB P/N PC1197

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DESIGNED BY: M. RODRIGUEZ

CHECKED BY: V. CAMPOS

RELEASED BY: M. RODRIGUEZ

Title

SAFE BASS MODULE

Size

A

Number

ZD0222

Rev

00

Date

03/04/97

Drawn by

S.ROJAS

Filename

ZD0222-0.S01

Sheet

1 of 2

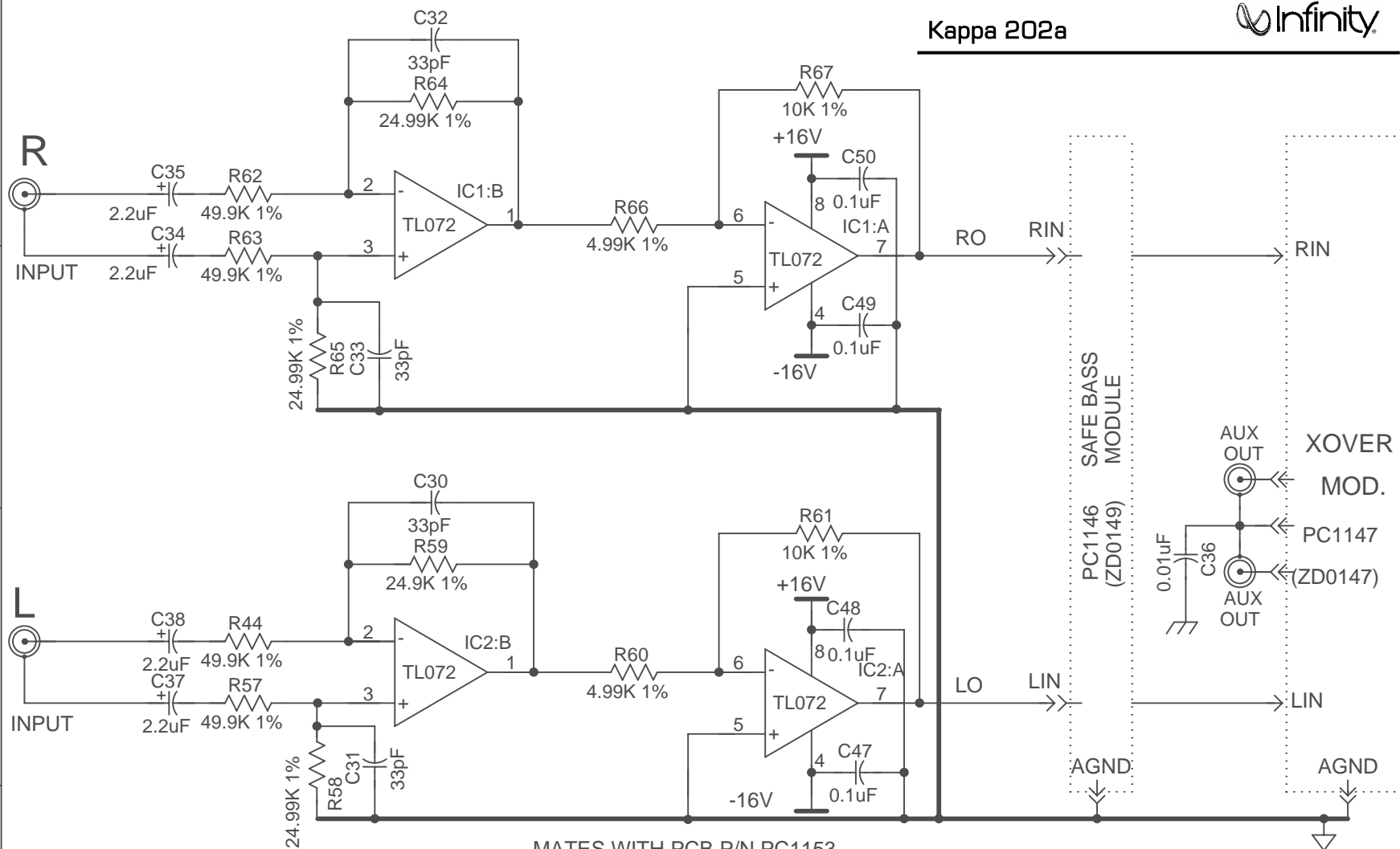
A

B

C

D

Kappa 202a



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DESIGNED BY: M. RODRIGUEZ

CHECKED BY: V. CAMPOS

RELEASED BY: M. RODRIGUEZ **33**

Title **KA202a DIFFERENTIAL AMP.**

Size  
**A**

Number  
**ZD0135**

Rev  
**00**

Date **08/19/96**

Drawn by **R. MACIAS**

Filename **ZD0135-0.S02**

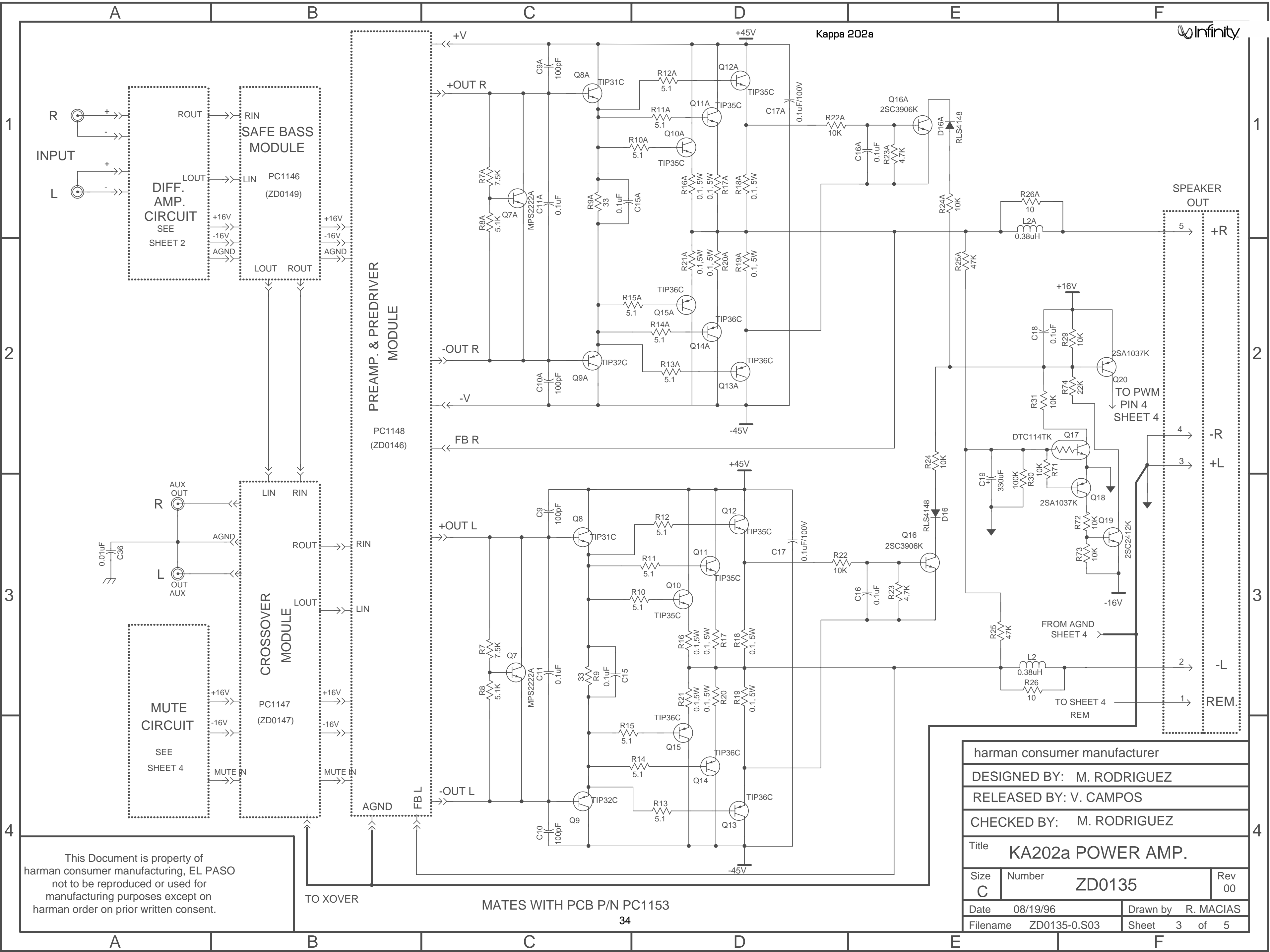
Sheet **2** of **5**

A

B

C

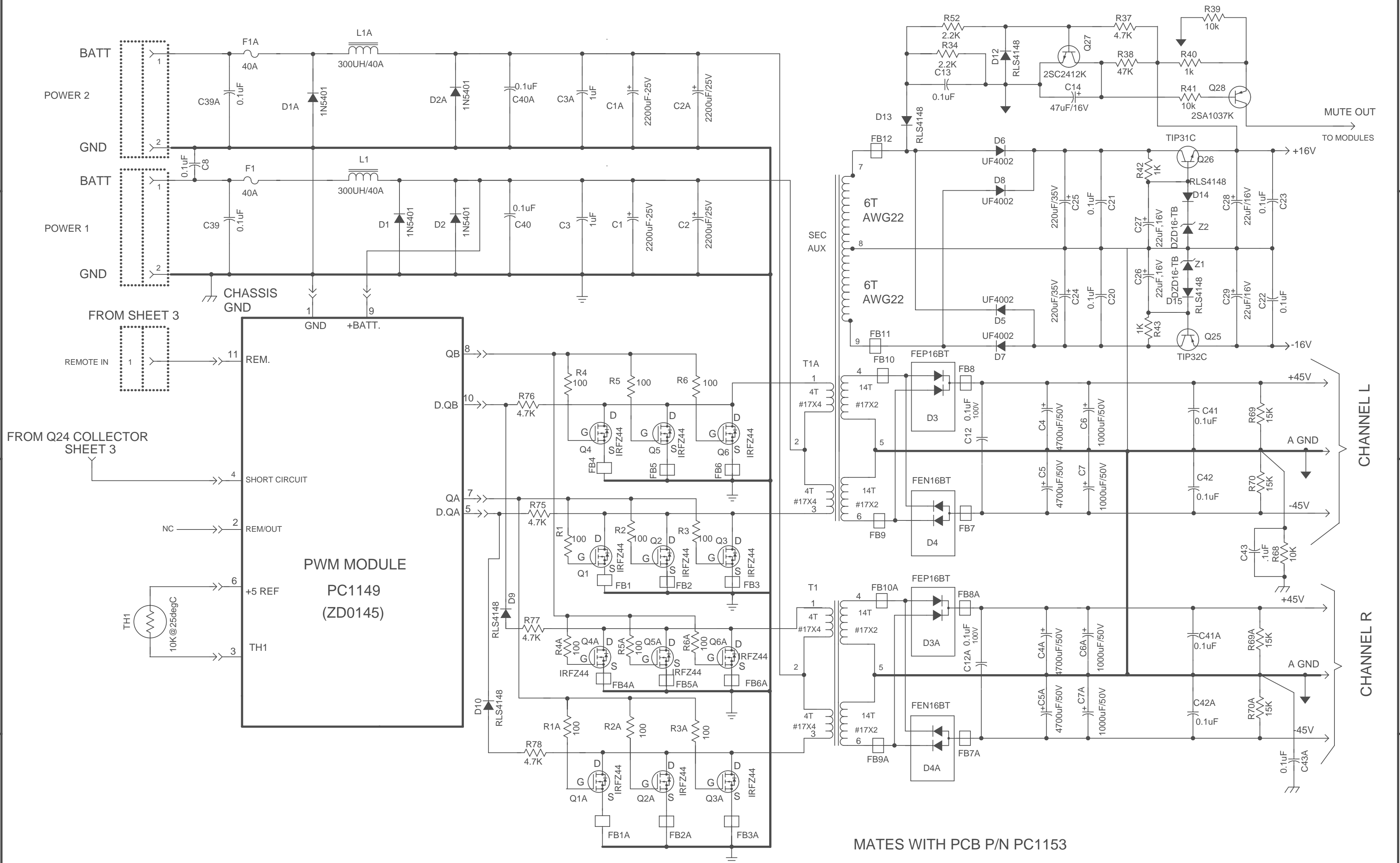
D



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harman consumer manufacturer		
DESIGNED BY: M. RODRIGUEZ		
RELEASED BY: V. CAMPOS		
CHECKED BY: M. RODRIGUEZ		
Title KA202a POWER AMP.		
Size C	Number ZD0135	Rev 00
Date 08/19/96	Drawn by R. MACIAS	
Filename ZD0135-0.S03	Sheet 3	of 5

MATES WITH PCB P/N PC1153



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RELEASED BY: M. RODRIGUEZ

Title KA202a POWER SUPPLY

Size C Number ZD0135

Rev 00

Date 08/19/96

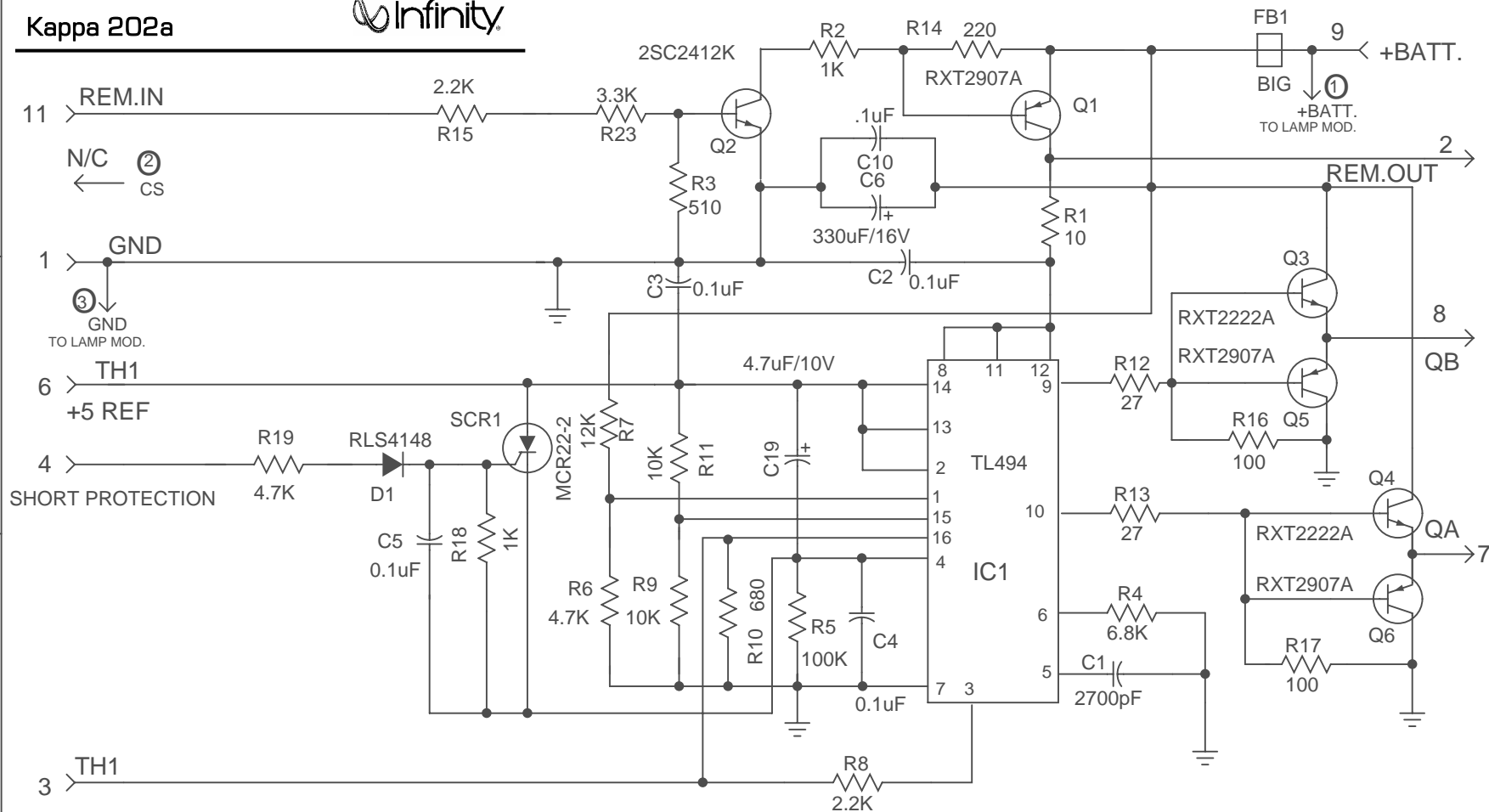
Drawn by R. MACIAS

Filename ZD0135-0.S04

Sheet 4 of 5

Kappa 202a

Infinity



MATES WITH PWM MODULE P/N PC1149

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DESIGNED BY: M. RODRIGUEZ

CHECKED BY: A. MARTINEZ

RELEASED BY: M. RODRIGUEZ

DOCUMENT CONTROL: FRED COOLEY

Title

PWM MODULE

Size

A

Number

ZD0145

Rev

02

Date 08/15/97

Drawn by R. MACIAS

Filename ZD0145-2.S01

Sheet 1 of 2

A

B

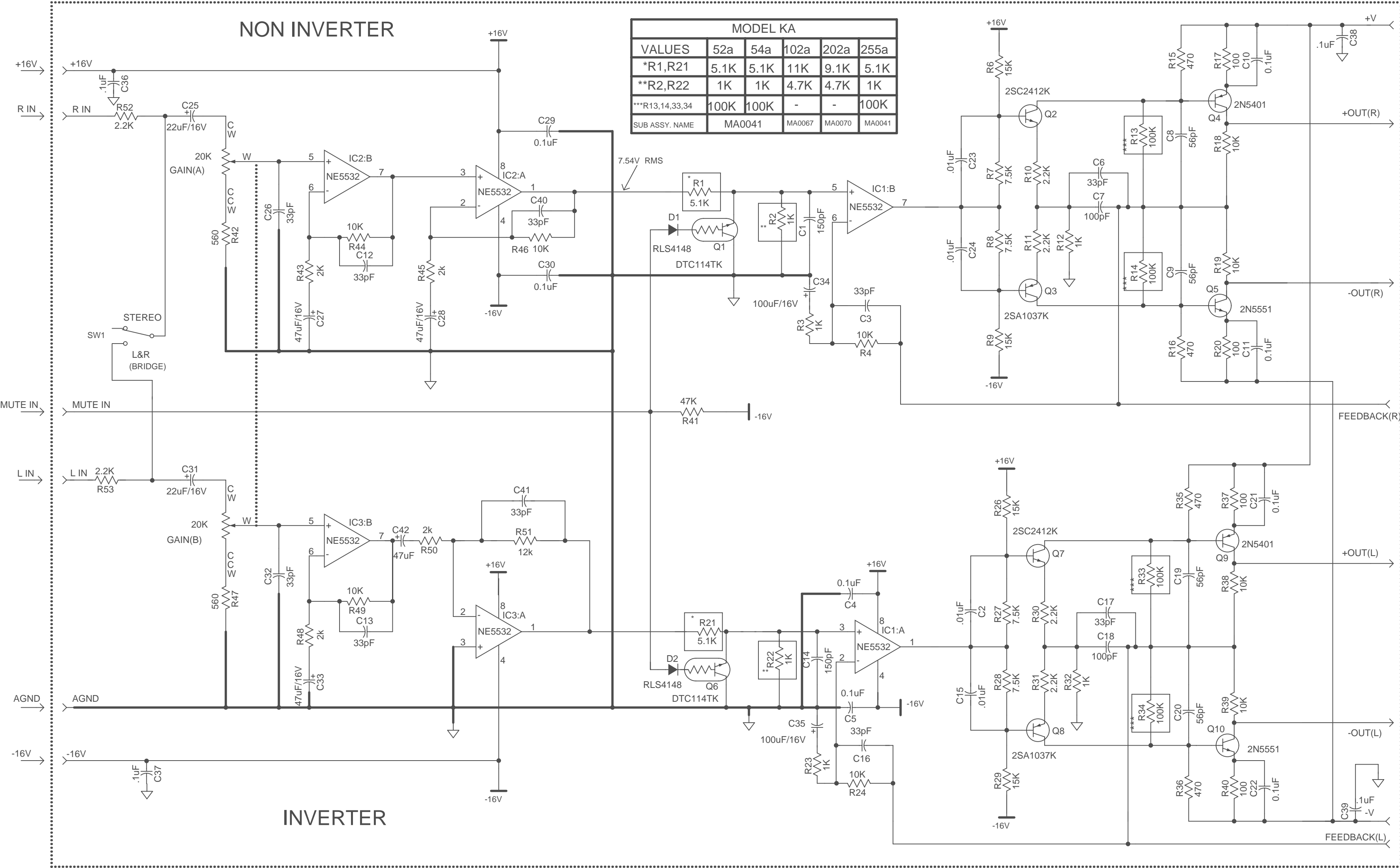
36

C

D

NON INVERTER

MODEL KA				
VALUES	52a	54a	102a	202a
*R1,R21	5.1K	5.1K	11K	9.1K
**R2,R22	1K	1K	4.7K	4.7K
***R13,14,33,34	100K	100K	-	-
SUB ASSY. NAME	MA0041	MA0067	MA0070	MA0041



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DESIGNED BY: M.RODRIGUEZ

CHECKED BY: V. CAMPOS

RELEASED BY: M. RODRIGUEZ

Title  
PREAMP PREDRIVER. MODULE

Size  
C

Number  
ZD0146

Rev  
00

Date  
08/20/96

Drawn by  
R. MACIAS

Filename  
ZD0146-0.S01

Sheet  
1 of 2

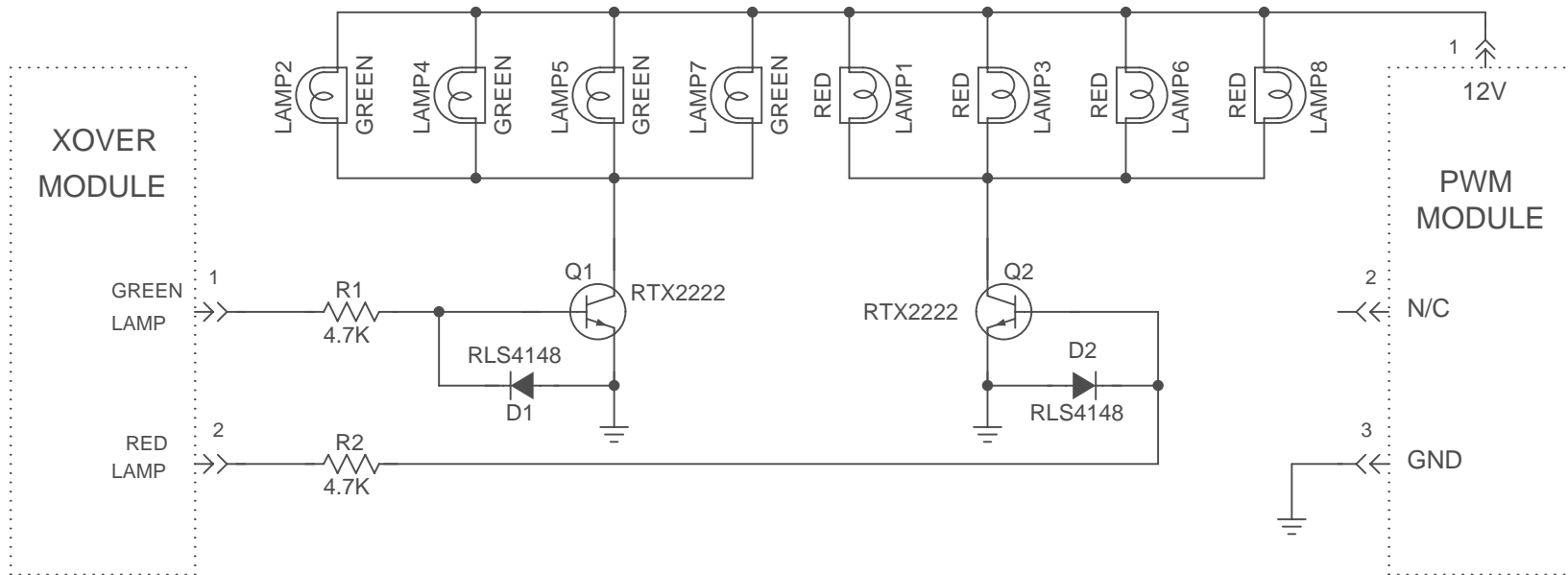
A

B

C

D

Kappa 202a



MATES WITH PCB P/N PC1159

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DESIGNED BY: M. RODRIGUEZ

CHECKED BY: V. CAMPOS

RELEASED BY: M. RODRIGUEZ

Title

LAMPS MODULE

Size

A

Number

ZD0152

Rev

01

Date 03/06/97

Drawn by R. MACIAS

Filename ZD0152-1.S01

Sheet 1 of 2

A

B

38

C

D

A		B		C		D		E		F	
Infinity											
1	DATE	REVISION	CHANGE DESCRIPTION		REASON OF CHANGE		CHANGED:		ECN#		
	DATE	REVISION	CHANGE DESCRIPTION		REASON OF CHANGE		CHANGED:		ECN#		
	03/06/96	01	DELETE D3		FALSED TRIGGERING ON SHORT CIRCUIT PROTECTION		R. MACIAS				
	12/03/96	01	DELETE D2 TO D7,C7,C8,C9,C11,R20,R21,R22,R24,R25,SCR2		FALSED TRIGGERING ON SHORT CIRCUIT PROTECTION		R. MACIAS				
	08/15/97	02	CHANGED R15 FROM 1K TO 2.2K		DECREASE SENSITIVITY REMOTE ON/OFF 8V INSTEAD 6.5V.		S.ROJAS		10216		
2											
3											
MATES WITH PCB P/N PC1159			39								